COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

Volume 22 NEW YORK, THURSDAY, OCTOBER 19, 1922 Number 16

More—or Less—Unionism

INTERESTINGLY written is James W. Cain's recital of facts in "The Battleground of Coal," in the current issue *The Atlantic Monthly.* But it is not with his facts but with his theories and his cures that the public is justified in taking issue. He shows that before the strike the union mines were idle for lack of orders and the non-union mines were working, their activity being due to lower wages. Then he adds:

> From the foregoing it would seem that the solution of the problem lies in putting the whole country on a non-union basis. This is just what the operators are trying to prove. Not only the non-union operators but the union operators as well distribute this propaganda; newspapers are flooded with it. Yet it is clear that the argument of the operators is valid only in a superficial sense, even though present conditions lend it considerable plausibility. For obviously the prosperity of the non-union fields prevails not through any superiority of non-unionism *per se* but from the artificial advantage they have on account of their lower wage expense.

Mr. Cain is right; the enslavement of part of the industry to the United Mine Workers of America and the freedom of the other part from it is the cause of the wage differential and of the inequality of operation in the two districts which existed before the strike. But he has taken on himself to oppose the cure that many operators suggest, and the one which he himself admits is the more obvious outcome of the facts he has presented. Eliminating the cure of national non-unionism he says:

> There is one plan left—short of a big government corporation to run all coal mines—which promises some sort of solution. This is to put the whole country on a union basis and give all operators an equal chance at the market and all mines an equal chance at regular work.

Miners are now reported as making, where they get sufficient railroad and mine cars and are willing to work, as much as $500 and $600 a month. Surely they would not be willing to pay as much as $20 or $25 a day to those who would work for them.

Are they not demanding by the power of their union that other men work in mills and factories, on the high roads and on the railroads and at the desk for less money than they are willing to accept for themselves? We do not put any figure as being a fair wage for any man. We do not condemn labor profiteering. Nor does the law condemn it. Doug Fairbanks, Feodor Chaliapin and Babe Ruth may make their millions or hundreds of thousands or tens of thousands yearly so long as they do it without a combination in restraint of trade. We do condemn them, however, if they obtain high wages by deliberate conspiracy, by murder and other violence, by arson and violation of pledges, by the enactment of laws which while purporting to be for the public good are framed solely to sustain their monopoly and to give them an unfair advantage.

But mark this. The complete unionization of the mine worker would mean the complete unionization of his employer, legal or illegal. The union in fact demands a co-operative bargain between all the employees and all the employers. With all operators paying a scale fixed by a single conference, the employer could laugh at high wages. He would have no incentive to fight to keep wages down, for strikes would be extremely expensive to him as a capitalist. The higher the wages, the more men would flock to his mines. He would have no difficulty in filling the working places no matter how irregularly he worked.

Consequently complete unionization of the mine worker would do great injury to the public unless the government stepped in to prevent it. Mr. Cain does not want that, nor do the operators, but it would be the inevitable result of 100 per cent unionism.

Mr. Cain goes on to say that "it would be a step back to the Dark Ages to put the whole country on a non-union basis. The miner would be reduced almost to peonage." In this he is absolutely wrong. Just before the strike came to an end the non-union United States Steel Corporation, anxious to get men, had to raise wages. The Anaconda Copper Mining Co., at Butte, Mont., now a corporation employing non-union men, is paying $4.75 a day to miners and would, if it could afford it, raise the wage still higher to get men to operate its plants. The Cœur d'Alenes are paying $5 a day.

The wage of non-union men is usually lower than the pay of union men, but that is because the profits of any trust are higher than those of a competitive industry. The profits of a trust, whether a commodity or a labor trust, are sure to be excessive unless the prices of the commodities or the wages of the laborer are set so high as to discourage industry.

It is an ill time to talk of giving Mr. Lewis and his men a firmer hold on the throat of the public when they are demanding a six-hour day and a five-day week in order to furnish men with excessive opportunity in the coal industry when they are needed more elsewhere.

A Maligned Industry's Opportunity

THE announcement of the personnel of the U. S. Coal Commission has been met with mingled cheers and jeers by the coal men. Few appear to evidence hope or anticipation that the commission will or can do much for the soft-coal industry. The public has been led to hope that this agency will lower the price of coal and stop strikes. It, of course, can do neither. The coal men are today in about as pessimistic a mood as they ever have been. Battered between the forces at Indianapolis and Washington they entertain little hope of finding their way out of trouble.

Many there are who hold with Mr. Maurer, in his Cleveland address last week, that since the United Mine Workers will not arbitrate and will not take a reduction

in wages a strike is inevitable next April, and what can a commission do about that? A quite general remark is to the effect that for years information has been poured into Washington in hearings before this and that commission and committee, so what more can a new board expect to get? Furthermore, they say, what can a commission composed of men who do not know the industry expect to accomplish?

The big point that this brand of pessimism overlooks is that here is the greatest opportunity ever offered of a maligned industry. Here is a group of men of more than the usual run of ability, with no axe to grind, with time and funds to pursue its job, not called on to adjudicate trouble or arbitrate wages, but to digest the evidence, much of which, quite fortunately, has already been put in the archives of the government, on as complicated, complex and controversial a question as has been before any body in our industrial history.

The proceedings before the commission may be looked on as a court and the main work that of tearing down the structure of the opposite side. Or the proceedings may be treated as a council table where both coal operators and mine workers may in turn sit down with an uninformed public and tell its story, reasonably confident that when that public, through its selected representatives, finally makes its conclusions known and its recommendations public, it has been governed by what it has learned, that it has been able to peer beneath the surface and that it has been as fair with the industry as the industry has been with it.

Progress at the Mining Congress

A LOOSE, ungainly organization, the American Mining Congress is making progress in taking on some of the functions of older organizations. Not a few of those who attended the Cleveland meeting last week commented on the excellence of the programs and discussions on mine taxation and standardization of mine equipment and mining methods and did not hesitate to compare them with similar efforts conducted under the auspices of the American Institute of Mining and Metallurgical Engineers. In fact, the so-called standardization conferences really are engineering discussions, where the everyday problems of mining are taken up by young men not afraid to be trite at times if they can talk about the things that concern them in the routine of their business.

The mine-taxation conference this year called together many of the country's authorities and the interest in the discussion proves that this subject is gaining in popularity every year. Such open discussion of the coal questions of the day as characterized the Wednesday morning session, when J. G. Bradley, of West Virginia, and C. E. Maurer, of Ohio, had the floor, has never been heard at a meeting of coal men—at least a public meeting.

As the advertising pages of a magazine are to the reading pages so the exhibit of mining machinery and equipment supplemented the meetings and discussions. To some in attendance it appeared that the management in its desire, and perhaps necessity, to return a profit subordinated all to the "show," and relegating important meetings to low-ceilinged, poorly ventilated rooms gave color to this belief. The exhibit, of course, added interest and value to the congress, but care should be taken not to add to the belief that these conventions are merely gatherings of salesmen.

A queer conglomeration of coal mining institute, coal operators' gathering, meeting of economists, Institute of Mining Engineers and county fair, at which no particular attention was paid to the advance slogan, "Greater Prosperity Through Lower Production Costs," the silver anniversary of the American Mining Congress was a success. To this success the coal men of Ohio in particular contributed no small share.

Efficiency vs. Reduced Wages

IN 1921, when coal was in slack demand and prices falling, the operator of a coal mine was offered a railroad-fuel contract for a tonnage representing more than half full-time operation, but at a figure what would not return cost. Business was difficult to get and his men needed the work. He called them together, told them the situation, said that he was willing to take the contract if he could be assured of sufficient margin to cover interest, depreciation and depletion—that is, fixed charges, but no profit. He told the men he was not willing to ask them to take a reduction in wages, but he was asking them to increase their efficiency.

After some debate the proposal was made and accepted by the men that 10 per cent be deducted from each pay envelope and held in escrow, as it were, this amount representing approximately the difference between cost and price. It was put up to the men to increase their efficiency, thereby lowering costs, and it was agreed that if they did their part the 10 per cent held out would be returned.

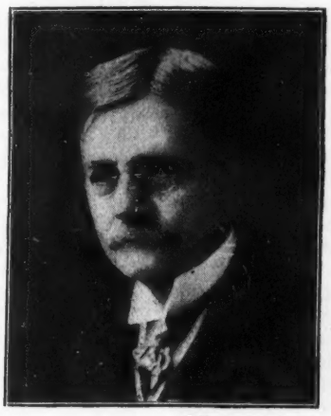
Now, of course, to increase efficiency here meant the exercise of hearty co-operation between men and management, particularly with the daymen. It meant studious avoidance of preventable mine failures, derailments and mechanical breakdowns. It meant working with a will, getting cars to the diggers, shooting loads to the shaft bottom—for this was a shaft mine—it meant steady application to the daily task, whether track laying, dumping coal or any of the many jobs about the coal mine. On the part of management it meant keen appreciation of the value of the time of the tonnage man, giving him a proper place in which to work and such prompt service as his ability to load required.

By the end of the first pay the preliminary cost sheets indicated that it had been done—that costs had been lowered in sufficient amount without cutting wages. Every pay thereafter the men received two envelopes, one the full rate less 10 per cent and the other deducted 10 per cent in accordance with the agreement with the men.

It is needless to say that this was a non-union mine. It is also needless to say that this mine was an exception among the non-union mines in 1921. There was nothing particularly humanitarian about the course pursued by the management of this mine, for there were cogent reasons for the method followed, reasons found in union mines in close proximity on every side. The fact remains, however, that in the absence of a union it was possible to get close enough to the men to substitute efficiency for reduced wages.

WITH THE COMING OF A COAL PEACE there remains nothing to worry about except the delivery of coal and the arrival of the bill.—*Brooklyn Eagle.*

NO SYSTEM OF GOVERNMENT will work in a land where everybody tries to work the government.—*Illinois State Register.*



©Harris & Ewing

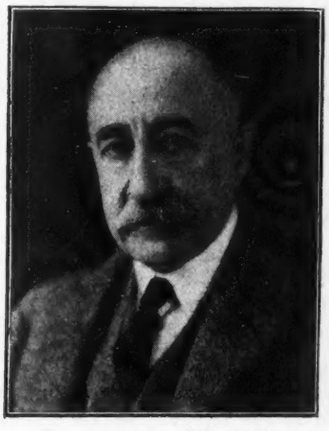
THOMAS RILEY MARSHALL

P. & A. Photos, Inc.

CLARK HOWELL

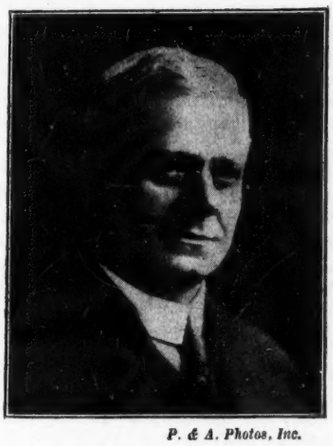
©Harris & Ewing

DR. EDWARD T. DEVINE



©Harris & Ewing

JOHN HAYS HAMMOND

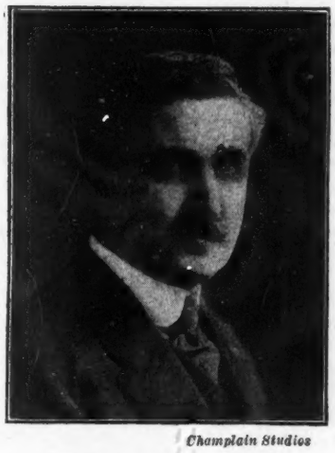


P. & A. Photos, Inc.

JUDGE SAMUEL ALSCHULER

©Harris & Ewing

CHARLES P. NEILL



Champlain Studios

GEORGE OTIS SMITH

United States Coal Commission

Appointed Oct. 10 by President Harding, Under Act of Congress Approved Sept. 22, 1922

United States Coal Commission Named

President Harding announced Oct. 10 his selections for the federal commission which will make an exhaustive study of the problems of the coal industry. The White House announcement carried a brief biographical statement. The text of the White House announcement in full is contained in the following:

John Hays Hammond, native son of California, where he was born in 1855, was one of the remarkable group of Californians who led in making the mining of the precious metals the highly specialized and scientific industry it is now. Educated at Yale, Stephens Institute and Freiberg, Germany, he became one of the foremost engineers and authorities, examining and handling properties in all parts of the world. He was associated with the Barnato Brothers and with Cecil Rhodes in developing the South African gold fields, and was one of the supporters of the great Rhodes political and financial projects. Following the famous Jameson raid, he was arrested by the Dutch authorities and sentenced to death; afterward commuted to fifteen years' imprisonment and ultimately released on the payment of $125,000 fine. Since returning to the United States he has continued his professional work in connection with important financial interests and he has lectured and written extensively. He was special ambassador and representative of the United States at the coronation of King George V; head of Panama Pacific Exposition Commission to Europe; president National League of Republican Clubs; associated with many scientific, literary and technical societies. His present home is in Washington.

Thomas Riley Marshall, vice-president during the eight years of the Wilson administration, is a native of Indiana. He is a graduate of Wabash College; practiced law at Columbia City, Ind., and was Governor of Indiana, 1909 to 1913.

Judge Alschuler a Noted Labor Arbitrator

Judge Samuel Alschuler was born in Chicago and has practiced law in Aurora and Chicago. He has been active in Democratic politics throughout many years, having served in the Illinois Legislature, and has been his party's candidate for Congress, and, in 1900, for Governor. In 1915 he was appointed by President Wilson to the circuit bench of the Seventh U. S. Circuit, on which he still is serving. Judge Alschuler in 1918 was named by the Secretary of Labor as arbitrator of the labor disputes between the Chicago packers and their employees, and his handling of the business has been recognized as one of the notable labor arbitrations in this country.

Clark Howell, editor of the *Atlanta Constitution*, is a native of South Carolina, but has lived most of his life in Goergia, and was educated at the University of Georgia. He joined the *Constitution* staff and became managing editor when Henry W. Grady died; later he succeeded his father, the late Evan P. Howell, as editor in chief. He served in the Georgia Legislature and for many years as Democratic National Committeeman for Georgia.

George Otis Smith, Director of the U. S. Geological Survey, a native of Maine, was educated at Colby College and at Johns Hopkins. His interest in coal began in 1895 and 1896, when as an assistant geologist of the U. S. Geological Survey he was working in the vicinity of the coal fields of western Washington. Later in the field seasons of 1898, 1899 and 1901 his geologic work in central Washington included the mapping of the Roslyn coal field, the Roslyn mines being then the largest producer on the Pacific coast.

In the first comprehensive treatment of the United States coal fields by the U. S. Geological Survey in 1901 Dr. Smith contributed the chapter on the Pacific Coast coal fields. As Director of the U. S. Geological Survey since 1907 he has taken special interest in the development of the statistical service on coal, first with E. W. Parker, next with C. E. Lesher, and since 1919 with F. G. Tryon, three names that practically sum up all that is known of coal statistics.

In 1917 Director Smith was a member of the Committee on Coal Production of which the late Francis Peabody was chairman. In 1920-21 the "Superpower Survey," a coal-saving investigation under the auspices of the Geological Survey, engaged much of Director Smith's time.

Dr. Edward T. Devine is a native of Iowa, educated at Cornell College (Iowa), University of Pennsylvania, University of Halle, Germany. He has been a teacher, writer and lecturer on social and economic questions; general secretary of the Charity Organization Society of New York; editor of the *Survey* for a number of years and more recently a contributing editor; served with the American Red Cross in France during the war; author of many books and articles, especially on philanthropy and charity. Residence, New York City.

Charles P. Neill is a native of Illinois; educated at Notre Dame University of Texas and Johns Hopkins; instructor in political economy at Notre Dame and later at the Catholic University, Washington. In 1905 he was made commissioner of labor by President Roosevelt, later commissioner of labor statistics, Department of Labor. He was a member of the Board of Adjustment under the Erdman Act for the adjustment of labor disputes between railroads and their employees, and has had a long career of unfailing success in the settlement of the most difficult questions of this kind through mediatory processes. He has since 1915 been manager of the Bureau of Information of the Southeastern Railways, dealing with labor problems and conditions.

Organization Meeting to Be Held Oct. 18

The commission will meet for organization purposes on Oct. 18. While Mr. Marshall and Dr. Smith each has been mentioned for the chairmanship of the commission, it is believed that Mr. Hammond will be named for the post.

Practically all comment on the personnel of the commission is favorable. It generally is regarded as a good blend of conservative and liberal opinion. Perhaps never before has any investigation of coal by a federal agency started with so little prejudice. It has the great advantage of having a personnel which is not in any way interested in making political capital out of their fact-finding activities. In this way the commission differs greatly from the efforts of several congressional investigating committees. It is believed that both operators and mine workers hardly could ask for a more sympathetic group before whom to lay their facts.

Particular satisfaction is manifested in all quarters in Washington at the appointment of Mr. Hammond. His name has been linked so prominently and so intimately with the mining industry that it is regarded as particularly fitting that he should participate in what is expected to be one of the most important steps taken in connection with coal in recent years. While a man of wealth, Mr. Hammond has a reputation of being sincerely concerned with the public welfare.

It is believed that Mr. Neill has the confidence of both operators and mine workers. It is conceded that he knows more than anyone else, outside of the coal business, as to the conduct of collective bargaining in that industry. His long experience with employer-employee relationships leaves him with no delusions as to the inside situation in each camp.

Mr. Marshall is nationally known as a friendly type of philosopher with a real sense of humor. He has a general desire to ascertain honestly the other man's point of view and to do constructive things. At the same time he has none of the objectionable characteristics of the professional uplifter or one with trust-busting proclivities.

Judge Alschuler has given many indications of judicial balance and a sense of fair play. He is best known to the coal industry for his part in refusing to sustain Judge Anderson's check-off injunction.

Mr. Howell is a Southern editor but not of the fire-eating variety. He is a conservative and accustomed to pass dispassionately on questions of great moment.

Dr. Devine is held in universal regard and has that characteristic of good-will and friendliness which seems to run through each of the members of the commission.

Mining Brown Coal in Germany, Briquetting It and Extracting Its Byproducts

By Hubert Hermanns
Berlin-Pankow, Germany

Growing Importance of Brown Coal—Mining and Stripping Methods—Large Percentage of Moisture—Drying with Exhaust Steam—Briquetting and Baking Coal for Byproducts—Producer Method of Utilization

IN NO country has the production and utilization of brown coal[1], or rather brown lignite, had more development than in Germany. This substance has of late years become of greater importance to the Republic by reason of the decreased output of coal due to the decreased efficiency of the miners and to the loss of the important coal fields in Upper Silesia and the Saar valley. Moreover, large quantities of coal have to be delivered regularly to France, Belgium and Italy.

Table I shows the development of the production of coal, brown coal and brown-coal briquets in Germany between 1913 and 1920 and 1921.

TABLE I—PRODUCTION IN GERMANY OF COAL, LIGNITE AND LIGNITE BRIQUETS

Year	Coal (Steinkohl), Metric Tons[1]	Lignite (Rohbraunkohl), Metric Tons[1]	Lignite Briquets (Braunkohlenbricketts), Metric Tons[1]
1913	190,109,440	87,233,084	21,976,744
1920[2]	131,340,797	111,880,413	24,273,480
1921[2]	136,210,088	123,011,250	28,243,017

[1]A metric ton equals 2,204 lb., or 1.102 short tons.
[2]Not including Saar District and Pfalz. Though from 1913 to 1921 the coal production declined from 190,000,000 metric tons to 136,000,000, the brown-coal production increased from 87,000,000 to 123,000,000 and the brown-coal briquet production from 21,000,000 to 28,000,000.

The character of the brown-coal deposits in Germany varies greatly. Faults, folds, thrust faults, ruptures and interstratified layers of sand and shale often make the mining of the deposit quite difficult. The thickness of the bed varies from a few inches to 300 ft. The method of mining, whether by strip pit or by underground mining, depends on the depth of the deposit over the coal, the overburden consisting chiefly of sand and clay. When underground mining is adopted the coal is reached by a shaft and less often by a drift. Before the war a miner working underground in coal mines could be relied upon to mine 260 short tons per year, whereas the yearly production of brown coal per miner was between 350 and 400 short tons.

HOW THE GERMAN MINER AVOIDS USE OF BACKBREAKING SHOVEL

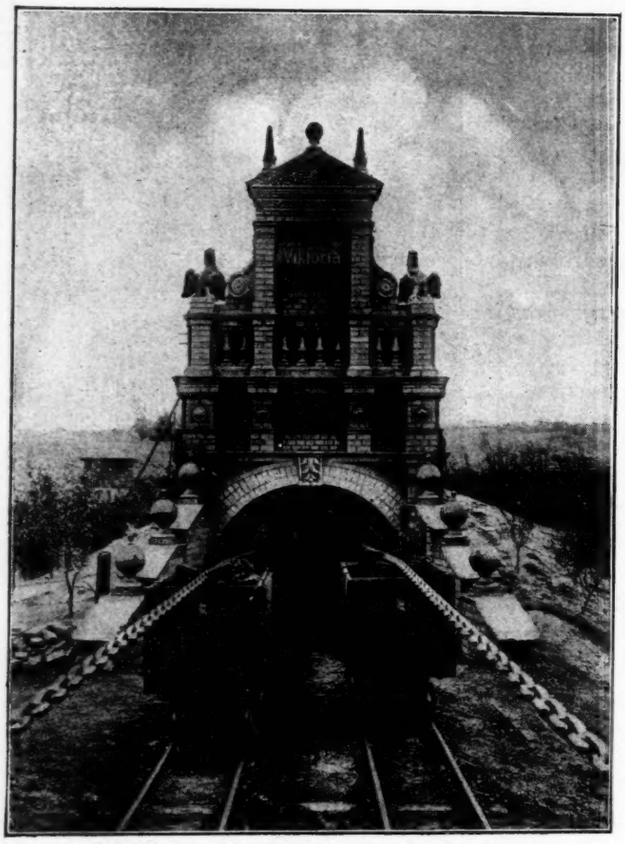
Another scene in a brown-coal strip pit. Note that the miners are forming a chute in the coal that will feed into the car without shovelling and have erected a chute with a gate so that the coal will be stored and the car will move away without delay. Thus the men will be able to work without cessation while cars are being placed.

By the use of the land dredger the production in strip pits has been raised to more than 1,500 tons per miner. Unfortunately the heat value of this lignite is only about one-third that of coal. However, even making due allowance for the lower calorific value of lignite, each man in a lignite operation will produce many more heat units than a man in a German coal mine. Whereas a coal miner would produce 2,000,000,000 calories per year, the yearly production for a miner working in brown coal is now 3,200,000,000 calories.

When brown coal is mined by underground methods an entry is driven through the deposit to the further property line with side entries on either side at regular distances and cross roadways between these; thus the coal is divided up into pillars measuring 4 meters (13 ft.) square. The coal obtained from these pillars is transported through the side entries to the main entry and up through the shaft.

The roof of the area thus excavated is allowed to

Note—Headpiece shows a miner making a cut in the shape of a bisected funnel in the face of the brown coal in a strip pit in Germany. The coal in this funnel runs, usually by gravity, into a car for which a recess has been made in the face to permit of its being spotted at the mouth of the funnel. Note the half pick the workman is using. Picks such as these have extensive use in the Continental coal fields of Europe. The shovel and car also are of what to us must appear unusual construction. The car is built like those used in our metal mines and, to our way of thinking, is needlessly high and better suited to a heavier material than coal. It is intended for a rotary dump.



NOT A MAUSOLEUM BUT A MINE PORTAL

A great contrast to our simple drift mouths, which, though sometimes, like those in the preceding illustration, rarely have anything more elaborate than a simple undecorated arch. This "foerderstollen" is at the mouth of the Victoria mine. The word "Gluckauf," meaning "Good luck," over the keystone of the arch and between the medallions will perhaps be hard to decipher.

collapse, forming at the surface a broken or sunken field. Production is started at the far end of the field and proceeds backward toward the shaft. Much lignite has to be left, however, and the losses of mineral in these mines usually exceed 40 per cent, whereas by daylight mining the losses are only about 5 per cent, seldom reaching 10 per cent. The losses by underground mining are such that if the overburden is two, or even three, times as thick as the coal deposit it is nevertheless profitable to remove it rather than work the mineral by underground mining methods. The difficulty in daylight mining is in disposing of the impurities mixed with the lignite. These are thrown into the areas already mined.

When the coal is mined by hand in these strip pits it is directed into cars by chutes laid close to the coal, or holes are dug in the face of the coal in the shape of a semi-funnel, and by these the coal is chuted into the car. (See headpiece.) This method is known as *rolllochbetrieb*. The narrow end of the "rollloch" is closed by boards and is placed so high above the level of the top of the car to be loaded that the latter can be run under it and filled by gravity, the loose coal in the funnel being released as desired. Usually the sides of the rollloch are made so steep that the loosened lignite will run down them without any assistance from the miner.

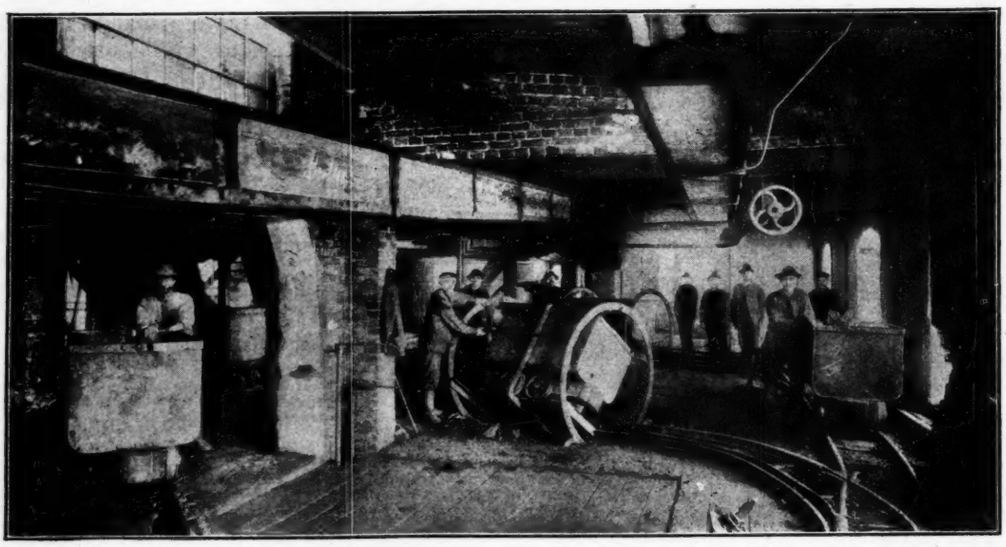
As Table I shows, most of the coal is burned without being briquetted. The use of this coal in its natural condition is limited because it contains from 25 to 50 per cent of moisture. The freight rates, figured on the basis of its heat value, are too high to encourage the use of such fuel. The heat value sometimes falls as low as 2,000 calories, or 3,600 B.t.u.

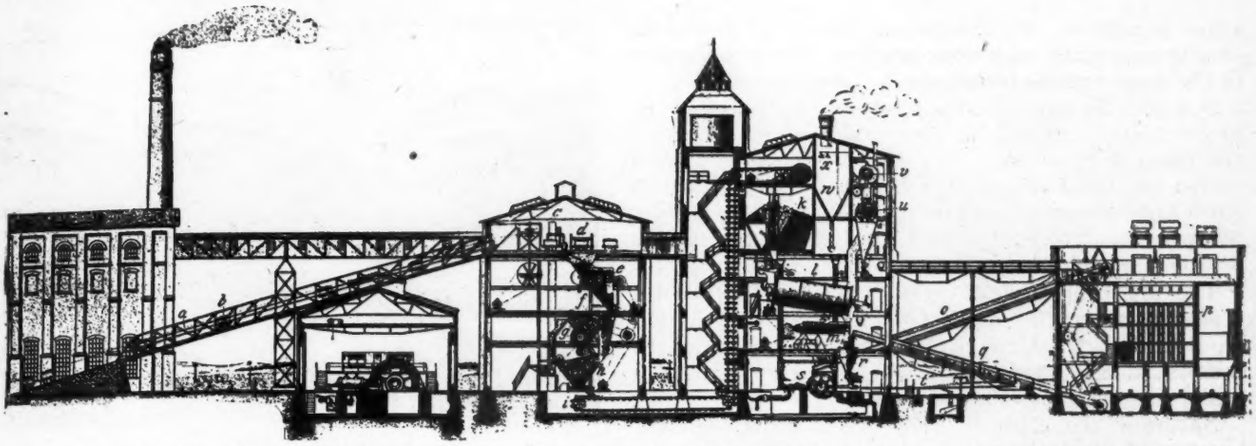
The difficulties encountered in burning this wet coal have been overcome in course of time by the construction of special furnaces in which the coal is dried before reaching the grate, but the principal way in which the economic value of brown coal can be increased is by its use in the manufacture of briquets. The cars are mostly conveyed by continuous chain haulage from the mine to the briquet plant. Three separate operations have to be performed. The lignite must be prepared, dried and briquetted.

First the coal is discharged from the car by a rotary dump. It falls into a funnel-shaped bunker, from which it goes to the crushers. The broken coal from these drops on an inclined shaking screen 13 to 20 ft. long and about 4 ft. wide. This allows particles less than ½ in. in diameter to fall through, the larger pieces going to rollers or a centrifugal mill. The finer coal is screened again, and the lumps coming from the screen are guided to a belt conveyor by which the coal is transported to the boiler house. The wet coal is dried either in tubular driers or on shelves heated by exhaust steam, this process usually being continued until the water content falls to 15 per cent. For tubular driers the pressure of the exhaust steam should be from 2 to 3

Revolving Dump

Revolving dumps operated by man power are found in most, if not all, European mines. The cars are light and turn over readily. Note the absence of iron plates. Instead an excellent point switch is used and guard rails are installed to prevent derailments. As will be seen in another illustration, the cars are brought to this point from the mine by an endless chain which here is traveling in the troughs suspended from the roof of the building.





PLANT FOR CRUSHING, SIZING, RECRUSHING, RESIZING, DRYING, COOLING AND BRIQUETTING BROWN COAL

(a) Endless chain, (b) coal car, (c) drive for endless chain, (d) revolving dump, (e) crusher, (f) shaking screen, (g) centrifugal crusher, (h) shaking screen, (i) bucket conveyor, (k) coal pocket, (l) tubular drier, (m) screening trommel, (n) fine crusher, (o) belt conveyor leading to cooler, (p) cooling apparatus with shutters, (q) belt conveyor from cooler, (r) funnel-shaped hopper over press, (s) briquetting machine, (t) trough conveyor for briquets, (u) centrifugal separating head serving to eliminate dust from drier, (v) exhauster to draw dusty air from u, (w) discharge louver, (x) spray to settle remaining dust.

atmospheres absolute. When shelves are used the pressure should range between 1.5 and 2 atmospheres.

The tubular driers consist of a sheet-iron shell 8 ft. 2½ in. to 9 ft. 10 in. in diameter and 23 ft. to 26 ft. long and two strong ends in which are inserted tubes of 3¾ in. diameter such as are used in tubular boilers. The coal slides through the tubes, which are surrounded by exhaust steam. The center line of the drier is at an angle of 6 deg. with the horizontal.

The shelf drier (*tellertrockner*) consists of twenty-five to thirty-six circular shelves of 16 ft. 4¾ in. diameter placed vertically above each other at regular distances. These shelves are each made of two circular iron sheets riveted to a frame, the space between them forming a chamber for the exhaust steam. By means of rotary shovels the lignite is constantly turned over and pushed alternately toward openings in the middle and on the outside which connect the separate shelves.

The dry coal goes to a trommel, or revolving screen, and is separated into fine coal and coal dust. It is then cooled in a *jalousiekuehler*. You have seen the small shutters on a Venetian blind; in Germany the latter is known as a *jalousie* (or jealousy) because it allows one to look out without being seen. In the cooler just named the coal falls on shutters similar to those in a Venetian blind, and between them cool air circulates. The lignite is cooled because it can be better pressed in briquets when its temperature has been lowered. Conveyors bring the dried and cold lignite to a bunker placed over the briquet presses.

Brown-coal briquets were manufactured as early as 1858, the coal briquetted being from the Von der Heydt mine. Many technical difficulties were encountered, however. In particular the pulverizing and drying apparatus both proved inefficient. All equipment and methods have been so greatly improved since that date that no more technical questions remain for solution.

Today plunger presses driven by steam are used almost exclusively for briquetting. Electrically driven presses are seldom seen; not because the drive is unsuited to that purpose but because exhaust steam is needed for the drying apparatus. The steam engine and press are combined in one heavy frame with a heavy crankshaft, common to both, in between. On this flywheels are mounted.

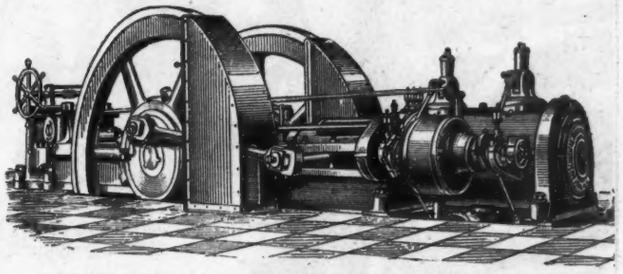
The stroke varies from 6½ in. to almost 11 in., depending on the condition of the coal and the desired density of the briquet. A rod transfers the crank movement to a heavy slide to the other end of which the plunger of the press is attached. The principal part of the press is the head in which is placed the mold consisting of a passageway 3 ft. 3 in. long open at both ends. The sides of the mold are of interchangeable steel plates, so set that the free opening is of the desired dimensions for the briquet being manufactured. The plates are so formed that the opening on the press side is a few millimeters wider than the rest of the passageway.

Briquetting Pressure Many Tons Per Square Inch

The difference in width depends on the nature of the coal and the desired firmness of the briquet. The opening can be regulated while the press is in operation. The plunger, fitting closely in the widest end of the channel, pushes a quantity of dry coal into the mold, and forms a briquet with every forward movement.

On the return stroke the space left by the retreating plunger is filled again with another measured quantity of coal, which is formed into a briquet at the next stroke. Each briquet is pushed forward in the mold by the one that succeeds it. On passing the narrowed part, the briquet is again subjected to pressure, causing much friction and consequently back pressure on the plunger.

Leaving the passageway the briquets land in a trough, through which they are pushed in a continuous string by the action of the plunger. The trough can be adjusted horizontally and vertically. The briquets usually fall directly into the railroad cars by which they are



STEAM PRESS FOR MANUFACTURE OF BRIQUETS

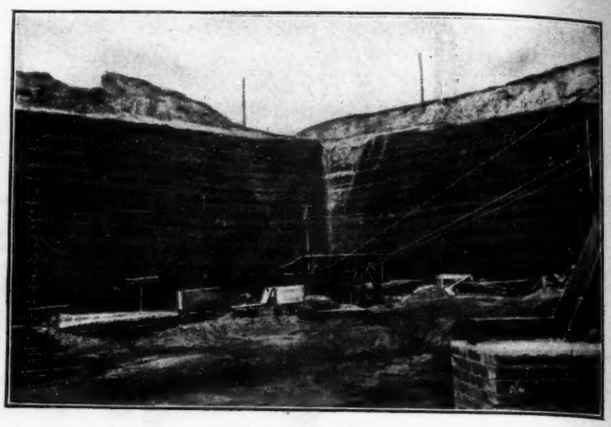
So much exhaust steam is needed for the drying of the moisture in the brown coal that steam engines are preferred to electric drives. The press and the engine are on a common foundation plate and a single crankshaft serves for both parts of the unit. The briquetting pressures run from 9 to 14½ short tons per square inch and the revolutions per second from 80 to 125.

taken to market. An illustration shows the pressroom of a briquet plant with eight presses. The construction of the press and the trough can be clearly seen.

Not only the length of the stroke but the speed of the press depends greatly on the condition of the coal; the speed is from 80 to 125 r.p.m. The pressure required for the forming of a briquet is from 1,200 to 2,000 atmospheres, 17,640 to 29,000 lb. per square inch. The press must be built so that the flywheels are capable of exerting such a pressure.

The dry coal is held together without any added binder, partly as the result of the high pressure exerted on it and partly through the heat generated in the process which softens the coal and the substances it contains, such as parafins and rosins.

Naturally the capacity of a press depends on the number of revolutions per minute and the weight of the briquets. In about twenty-four hours one machine will make from 60 to 100 long tons. The shape of the briquet varies greatly for industrial purposes, preference being shown for small cube or nut-shaped briquets.



STRIP PIT IN DEPOSIT OF COKING BROWN COAL

The overburden in this pit is noticeably light, though this doubtless has no relation to its coking quality. In America and elsewhere lightly covered coal usually cakes with more difficulty than deeper coal. The coking brown coals of Germany are yellow and even tend toward whiteness. They appear to be possessed of large quantities of paraffin, and they melt so freely in the fire that they serve but poorly under boilers.

Some Brown Coal Cokes Quite Readily

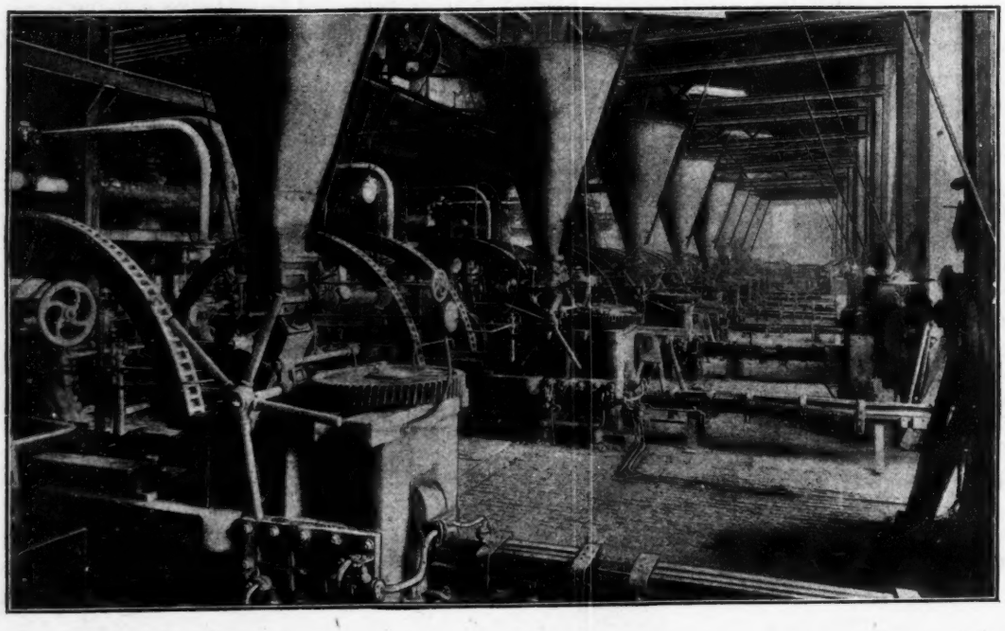
Although brown coal is used mostly in the form of briquets, it can be utilized in other ways. Where it will coke, like the brown coal from Halle, Zeitz and Weissenfels, it may be used in that form. The lignite, having coking qualities, can be readily distinguished from ordinary brown coal. The best coking lignite has a bright yellow, almost white, appearance. When burned it melts like sealing wax and cannot be used at all in grates, as the molten coal would fall between the bars.

This pure and rich coking coal, however, has all been mined. What remains, though more like brown coal, has a lighter color than the non-coking lignite. One of the illustrations shows a pit in a deposit of this character. The lignite is caked slowly so that the water is first separated from it, and later, at a higher temperature, the gases and tar. As a residue a porous and brittle coke remains, which is mostly used for domestic purposes.

The ovens in which the brown coal is baked are vertical shafts lined with firebrick, heated on the outside and provided with rings arranged like shutters, over which the coal slides, losing its moisture gradually. In the hotter part of the shaft the brown coal is decomposed into tar and gas. The coal is taken out at the bottom. The tar is drawn off with the gas and precipitated in a condenser. The gas from which the tar vapors have been extracted serves as fuel for the ovens.

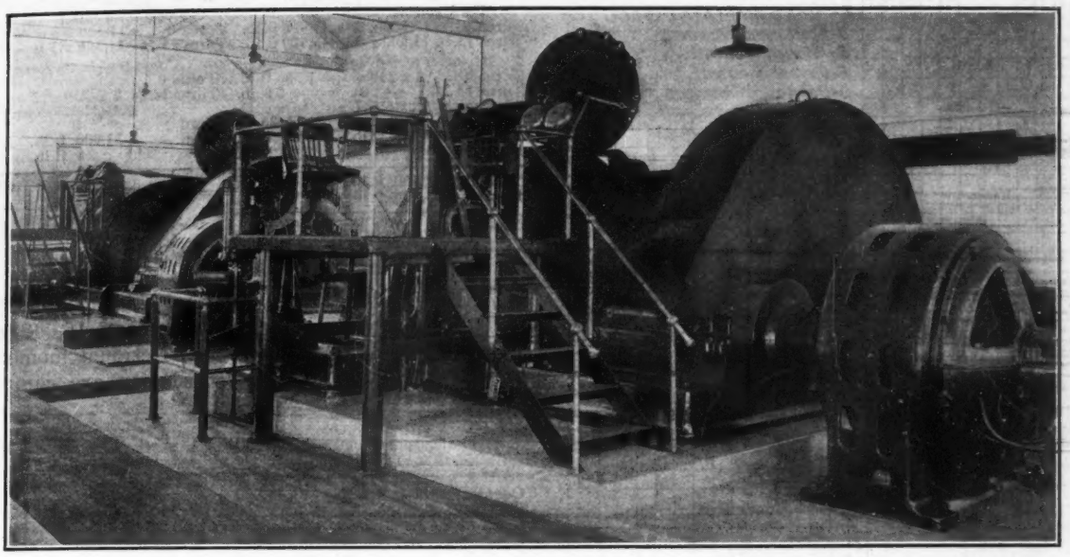
Of the tar, the paraffin, which is extracted by distillation in iron retorts, is the most valuable constituent. By distillation also the oils are freed from the paraffin; those of lower boiling point, forming "solar oil," are freed first. The heavier oils, containing paraffin, are then collected and cooled rapidly, and the paraffin is separated thereby. This is pressed and purified. The oils from which the paraffin has been extracted form cheap lubricating oils and oils for driving Diesel motors.

For some time, especially during the war, experiments were made to increase the production of oils and fuels of high heat value by the distillation of brown coal in producers. The tar in that case is not obtained by a baking process but by distillation. No coke remains but all the combustible materials are transformed into gas. Large quantities of tar were produced by this method during the closing months of the war.



Briquetting Room

Pressroom of briquet factory No. 2 of the Victoria Mine. This factory has eight presses each of which in a full day's run of twenty-four hours will produce from 60 to 100 long tons. Thus the whole factory will make from 500 to 900 short tons of briquets daily. Note the troughs by which the briquets move from the machines to the railroad cars, propelled by the pressure of the briquets leaving the machine.



Calculation of Power Required for a Counterweighted Hoist and One in Balance, Shallow Shaft*

Moments Required for Lifting Load Reduced by Moments of Falling Counterweight or Descending Load—Acceleration Moment Must Be Large Enough to Increase Speed of Descending as Well as Ascending Bodies

BY F. L. STONE†
Schenectady, N. Y.

IN LAST week's issue shaft calculations were made for an unbalanced, uncounterweighted hoist. In this article will be developed the calculations for a counterweighted hoist and one operated in balance. The counterweight that will give the best motor rating is one the weight of which is equal to that of the cage plus that of the car plus half the weight of the load. In the example given the following conditions were specified:

Total lift, ft.	250
Weight of cage, lb.	9,000
Weight of car, lb.	2,300
Weight of rock, lb.	8,000
Trips per hour	60
Rests, top and bottom, each, sec.	7
Rope	1¼ in. diameter, weight 2 lb. per ft.
Drum, cylindrical	6 ft. diameter with 2 ft. face
Weight of rotating parts at rope center, lb.	17,000

From these figures it can be deduced that the counterweight for this hoist should weight 15,300 lb. in all. The closer this condition is approximated, the closer will the two cycles, hoisting the load and hoisting the counterweight, coincide.

As 60 trips per hour are required and all other data are the same, the moments of the up load will be exactly the same as in the first case, except for acceleration and retardation moments, which will be increased by reason of the fact that the counterweight has also to be accelerated or retarded.

We will, however, proceed as if this were an entirely new problem as far as moments are concerned.

Up Load

Cage	9,000 lb.
Car	2,300 lb.
Rock	8,000 lb.
Total	19,300 lb.

Down Load

Counterweight	15,300 lb.

Up Moments, Cage and Load

At 0 turns, 19,300x3=57,900 ft.lb.
At 13.26 turns, 19,300x3=57,900 ft.lb.

Down Moments, Cage and Load

At 0 turns, 15,300x3=45,900 ft.lb.
At 13.26 turns, 15,300x3=45,900 ft.lb.

Moments, Up Rope

At 0 turns, 2x250x3=1,500 ft.lb.
At 13.26 turns, 0x3=0 ft.lb.

Moments Down Rope

At 0 turns, 0x3=0 ft.lb.
At 13.26 turns, 2x250x3=1,500 ft.lb.

Total Up Moments

Turns,	0	13.26
Load	57,900 ft.lb.	57,900 ft.lb.
Rope	1,500 ft.lb.	0 ft.lb.
Total	59,400 ft.lb.	57,900 ft.lb.
Down	45,900 ft.lb.	47,400 ft.lb.
Net	13,500 ft.lb.	10,500 ft.lb.

Total Down Moments

Turns,	0	13.26
Load	45,900 ft.lb.	45,900 ft.lb.
	0 ft.lb.	1,500 ft.lb.
	45,900 ft.lb.	47,400 ft.lb.

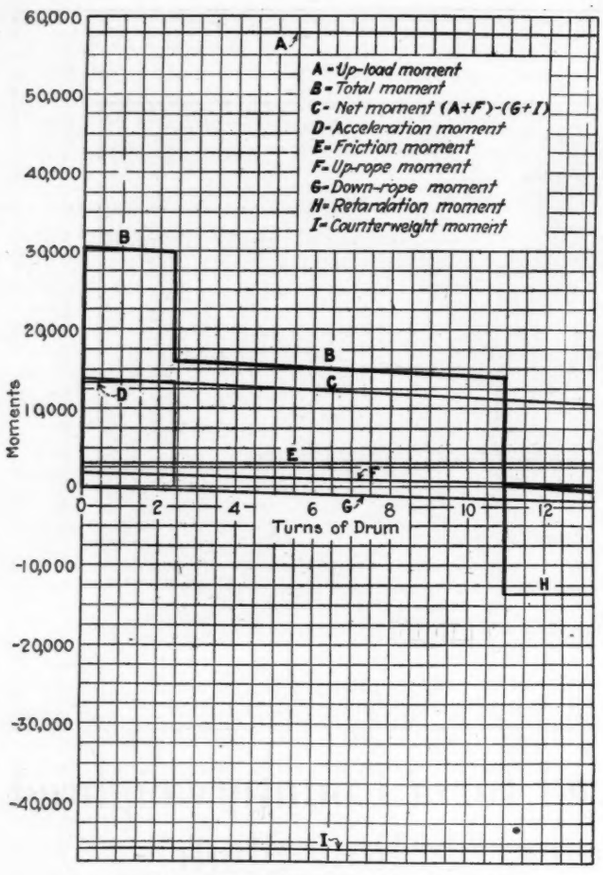
$$\text{Average moments} = \frac{13{,}500 + 10{,}500}{2} = 12{,}000 \text{ ft.lb.}$$

Assuming 80 per cent efficiency as before, 12,000 ÷ 0.8 = 15,000 ft.-lb. Substracting the average moment from 15,000 (that is, 15,000 — 12,000) we get 3,000 ft.-lb., which is the frictional moment. The acceleration and retardation may be calculated as follows:

NOTE—The headpiece shows ore and cage hoists at mine of Montreal Mining Co., Hurley, Wis.

*Other articles on hoist design by F. L. Stone may be found in *Coal Age*, Vol. 8, p. 916; Vol. 9, p. 923, and Vol. 22, p. 577.

†Power and mining engineering department, General Electric Co.



MOMENTS WHEN RAISING CAGE AND CAR AND LOWERING COUNTERWEIGHT

The heavy black line represents the total moments which are to the end positive, for the retardation moment at no time is sufficient to render it necessary to put a brake on the engine or to make the use of power for hoisting unnecessary.

Revolutions per second, full speed ..... = 0.78
Rope speed ..... = 14.68 ft. per sec.

$$\text{Acceleration} = \frac{14.68}{6} = 2.446 \text{ ft. per sec. per sec.}$$

In this, as in the first case, given in the article last week, p. 577, all the mass is moving at the same speed, including the rotating parts of the hoist, the values of which have been reduced to their equivalent at the rope center. We therefore can take the whole weight moving and determine the acceleration moment at one calculation. The load to be accelerated and retarded may be itemized as follows:

	Lb.		Lb.
Counterweight	15,300	Rope	1,800
Cage	9,000	Drum	17,000
Car	2,300	Head Sheave	7,000
Rock	8,000		
Total			60,400

$$\text{Accelerating force} = \frac{60{,}400 \times 2.446}{32.2} = 4{,}588 \text{ lb.}$$

Moment of accelerating force = 4,588 x 3 = 13,764 ft.lb.

Retardation, as before, will have the same value as acceleration, but with a negative sign—that is, —13,764.

SUMMATION OF MOMENTS (LIFTING LOAD) IN FT.LB.

Turns	0	2.34	2.34	10.92	10.92	13.26
Car, load and rope moment	13,500	13,200	13,200	10,800	10,800	10,500
Frictional moment	3,000	3,000	3,000	3,000	3,000	3,000
Moment of accelerating force	13,764	13,764	0	0	—13,764	—13,764
Total moment	30,264	29,964	16,200	13,800	36	—264
Time	0	6	6	17	17	23
Horsepower	268	266	144.2	122.7	0.3	—2.3

$$\text{Horsepower required} = \frac{2\pi \times 0.78 \times \text{moment}}{550} = 0.0089 \times \text{moment}$$

To the lifting of the counterweight and the lowering of the cage and cars the following computations can be applied:

Up Moments		*Down Moments*	
Turns 0	15,300 x 3 = 45,900 ft.lb.	Turns 0	—11,300 x 3 = — 33,900 ft.lb.
Turns 13.26	15,300 x 3 = 45,900 ft.lb.	Turns 13.26	—11,300 x 3 = — 33,900 ft.lb.
Moments of Up Rope		*Moments of Down Rope*	
Turns 0	2 x 250 x 3 = 1,500 ft.lb.	Turns 0	0 ft.lb.
Turns 13.26	0 = 0 ft.lb.	Turns 13.26	2 x 250 x 3 = 1,500 ft.lb.

Sum of Moments Up			*Sum of Moments Down*		
Turn	0	13.26	Turn	0	13.26
Load	45,900 ft.lb.	45,900 ft.lb.	Load	33,900 ft.lb.	33,900 ft.lb.
Rope	1,500 ft.lb.	0 ft.lb.	Rope	0 ft.lb.	1,500 ft.lb.
Total	47,400 ft.lb.	45,900 ft.lb.		33,900 ft.lb.	35,400 ft.lb.
Down	—33,900 ft.lb.	—35,400 ft.lb.			
Net	13,500 ft.lb.	10,500 ft.lb.			

$$\text{Average moment} = \frac{13{,}500 + 10{,}500}{2} = 12{,}000 \text{ ft.lb.}$$

Again assuming an 80-per cent efficiency and dividing by 0.8, the average moment will become 15,000, or 3,000 more than before, making the frictional moment 3,000 ft.-lb. Acceleration and retardation are computed as follows:

Revolutions per second = 0.78 and the rope speed = 14.68 ft. per sec.
Acceleration = 2.446 ft. per sec. per sec. as before.

Load to Be Accelerated or Retarded, Lb.			
Counterweight	15,300	Drum	17,000
Cage	9,000	Head sheave	7,000
Car	2,300		
Rope	1,800	Total, lb.	52,400

$$\text{Accelerating force} = \frac{52{,}400 \times 2.446}{32.2} = 3{,}980 \text{ lb.}$$

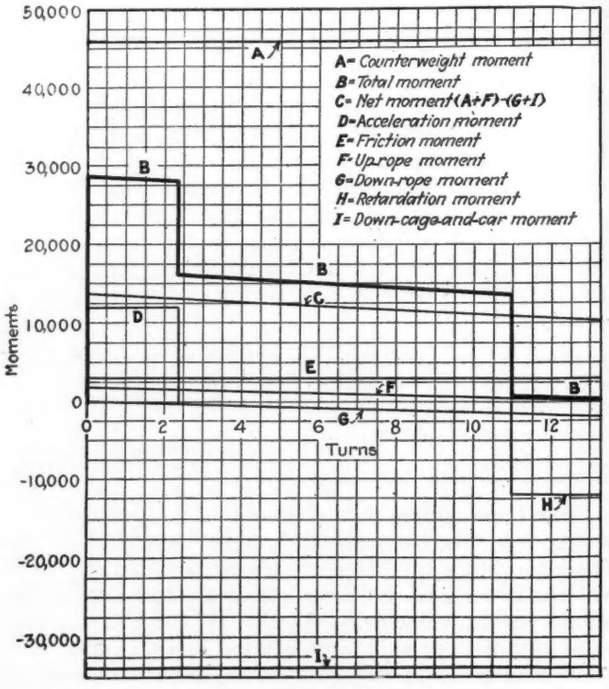
Moment of accelerating force = 3,980 x 3 = 11,940 lb.

The summation of moments in lifting the counterweight will be as follows:

SUMMATION OF MOMENTS (LIFTING COUNTERWEIGHT) IN FT.LB.

Turns		2.34	2.34	10.92	10.92	13.26
Counterweight and rope moment	13,500	13,200	13,200	10,800	10,800	10,500
Frictional moment	3,000	3,000	3,000	3,000	3,000	3,000
Moment of accelerating force	11,940	11,940	0	0	—11,940	—11,940
Total moment	28,440	28,140	16,200	13,800	1,860	1,560
Time	0	6	6	17	17	23
Horsepower	253	250	144	123	16.55	13.88

Horsepower = 0.0089 x total moment



MOMENTS WHEN LOWERING CAGE AND CAR AND HOISTING COUNTERWEIGHT

As the counterweight moment is reduced by the moment of the cage and car the total moment is less than the counterweight moment. The net moment equals the difference between the sum of the up-counterweight and up-rope moments and the sum of the down-cage, down-car, down-load and down-rope moments.

Glancing at the duty cycle it will be seen that the motor required for this work is much smaller than that necessary for hoisting a totally unbalanced load. The actual work done is that of hoisting the active load, rock or coal.

We have lifted 8,000 lb. of material through 250 ft., the work being done at an assumed efficiency of 80 per cent.

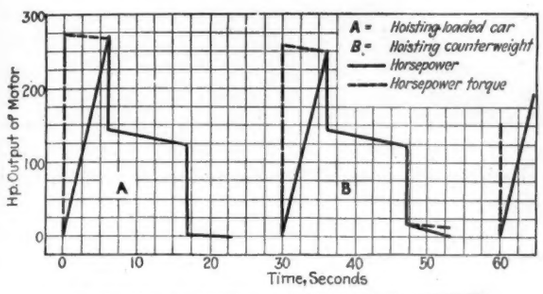
Work done = 8,000 x 250 = 2,000,000 ft.lb. or

$$\text{Horsepower-seconds} = \frac{2{,}000{,}000}{550} = 3{,}636$$

Then $\frac{3{,}636}{0.8}$ = 4,545 hp. sec., which should equal the area of the total duty cycle. Thus:

	Loaded Car Up	*Counterweight Up*
Accelerating	$\frac{269+266}{2} \times \frac{6}{2} = 802.50$	$\frac{253+250}{2} \times \frac{6}{2} = 754.50$
At full speed	$\frac{144.2+122.7}{2} \times 11 = 1{,}467.95$	$\frac{144.5+123}{2} \times 11 = 1{,}471.25$
Retarding	$\frac{1.07-1.83}{2} \times \frac{6}{2} = -1.14$	$\frac{16.55+13.88}{2} \times \frac{6}{2} = \frac{45.64}{}$
Total horsepower-seconds	= 2,269.31	2,271.39

Adding the horsepower seconds of work performed in the two cycles—namely 2,269.31 and 2,271.39—the result is 4,540.21, thus checking with the result previously obtained.



HORSEPOWER-TIME CURVE, DUTY CYCLE, COUNTERWEIGHT HOIST

The left graph, A, is that which refers to the hoisting of the loaded car and the right graph, B, that which relates to the hoisting of the counterweight, both being quite similar and differing but little in magnitude.

We will now consider the last case for this set of conditions—namely, hoist in complete balance. That is to say, we will assume a double-compartment shaft, cages and cars in balance and the same output, a trip per minute, as in the first two cases, that just calculated and that considered in *Coal Age* on pages 577 et seq. of this volume.

The up moments of the cage, car, rock and rope will be the same as before, that is, Turns 0 = 59,400 ft.-lb.; Turns 13.26 = 57,900 ft.-lb.

The down cage and car have the following weights: Cage 9,000 lb.; car, 2,300 lb.; total 11,300 lb.

DOWN MOMENTS

Turns 0 11,300 × 3 = 33,900 ft. lb.
Turns 13.26 11,300 × 3 = 33,900 ft. lb.

MOMENTS OF DOWN ROPE

Turns 0 0 ft.lb.
Turns 13.26 2 x 250 x 3 = 1,500 ft.lb.

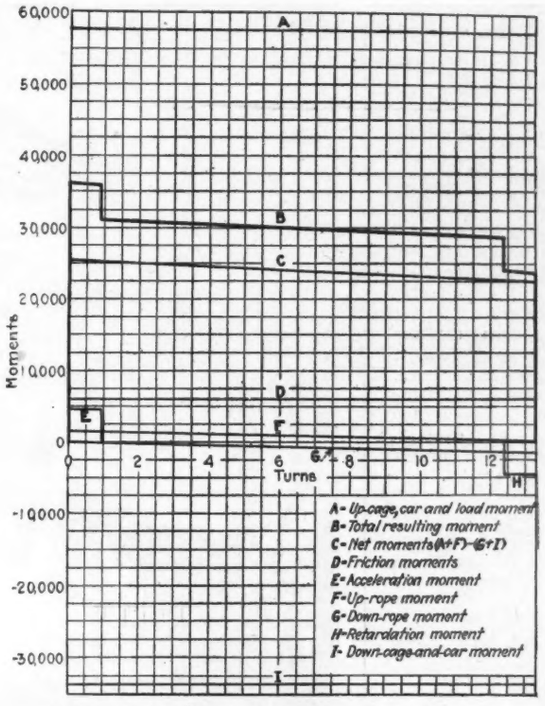
SUM OF MOMENTS DOWN

Turns 0 33,900 + 0 = 33,900 ft.lb.
Turns 13.26 33,900 + 1,500 = 35,400 ft.lb.

The down moments must now be deducted from the up moments.

Turns	0	13.26
Up moments	59,400 ft.lb.	57,900 ft.lb.
Down moments	33,900 ft.lb.	35,400 ft.lb.
Total	25,500 ft.lb.	22,500 ft.lb.

$$\text{Average net moment} = \frac{25{,}500 + 22{,}500}{2} = 24{,}000 \text{ ft.lb.}$$



MOMENTS WHEN HOISTING IN BALANCE

Here again the total moment, being the algebraic sum of two contrary moments, is less than the larger moment and in fact less than either. The net moment equals the difference between the sum of the up-car, up-cage, up-load and up-rope moments and the sum of the down-car, down-cage, down-load and down-rope moments.

Again assuming an 80-per cent efficiency and dividing by 0.8, the average net moment will become 30,000 ft.-lb., or 6,000 ft.-lb. more than before, making the frictional moment 6,000 ft.-lb. Acceleration and retardation should be determined as follows:

	Lb.		Lb.
Cages	18,000	Drum	17,000
Cars	4,600	Sheaves	7,000
Rock	8,000		
Rope	1,800	Total	56,400

Running time = 60—7 = 53 sec.

The acceleration takes place in 6 sec. and the retardation in 6 sec. as before.

$$\frac{13.26}{53 - \frac{6+6}{2}} = \frac{13.26}{47} = 0.282 \text{ revolutions per second, or } 16.9 \text{ r.p.m.}$$

$$\text{Turns during acceleration and retardation} = \frac{0.282 \times 6}{2} = 0.846$$

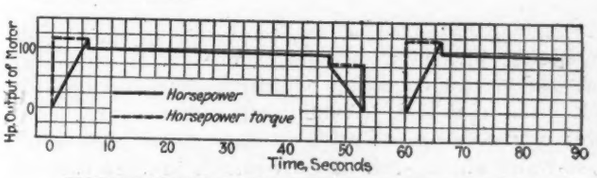
Velocity at full speed = 0.282 x 6π = 5.3 ft. per sec.

$$\text{Acceleration} = \frac{5.3}{6} = 0.884 \text{ ft. per sec. per sec.}$$

$$\text{Accelerating force} = \frac{56{,}400 \times 0.884}{32.2} = 1{,}548 \text{ lb.}$$

Moment of accelerating force = 1,548 x 3 = 4,644 ft.lb.

The summation of the moments for the balanced hoist will be found tabulated on the next page near the top of the left column.

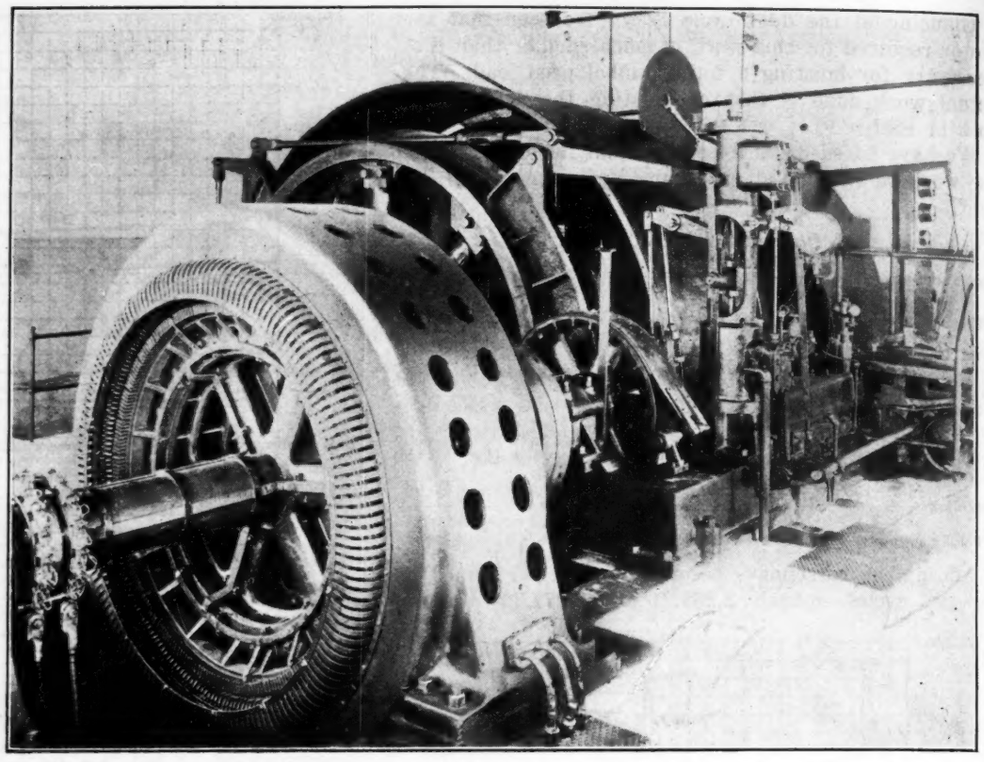


HORSEPOWER-TIME CURVE, DUTY CYCLE, BALANCED HOIST

The solid line represents the horsepower actually used and the dotted line the horsepower that must be provided. No horsepower can be actually used when the rope is not moving, but when the hoist is starting a horsepower torque must be provided as great as at any point in the cycle. A torque somewhat smaller but still large must be provided at the end of the cycle.

Electric Hoist

A balanced hoist at No. 14 shaft of the Lehigh Coal & Navigation Co., Lansford, Pa. The motor runs at 300 r.p.m. and uses alternating current at 2,200 volts.



SUMMATION OF MOMENTS (BALANCED HOIST)

Turns	0	0.884	0.884	12.36	12.36	13.26
Net moment	25,500	25,200	25,200	22,800	22,800	22,500
Frictional moment	6,000	6,000	6,000	6,000	6,000	6,000
Acceleration and retardation moment	4,644	4,644	0	0	—4,644	—4,644
Total	36,144	35,844	31,200	38,800	24,156	23,856
Horsepower	116.2	115.3	100.5	92.9	77.8	77
Time	0	6	6	47	47	53

$$\text{Horsepower} = \frac{2\pi \times 0.282 \times \text{moment}}{550} = 0.00322 \times \text{moment}.$$

A check on the area of the plotted cycle can be made as follows:

$$\text{Accelerating } \frac{116.2 + 115.3}{2} \times \frac{6}{2} = 347.25$$

$$\text{At full speed } \frac{100.5 + 92.9}{2} \times 41 = 3{,}964.70$$

$$\text{Retarding } \frac{77.8 - 77.0}{2} \times \frac{6}{2} = \frac{232.20}{4{,}544.15} \text{ horsepower seconds.}$$

Is Coal from Peat or from Drifted Matter?

SPEAKING before the British Association for the Advancement of Science Sept. 8 of this year the president of the geological section, Professor Percy Fry Kendall, declared that true coal seams—those, that is, that were autochthonous, or generated where found, that is from peat—had the following characteristics: (1) Wide extent, (2) uniformity of thickness and character over extensive areas, (3) freedom from intermingled detrital mineral matter, (4) constant presence of a seat earth or rootlet bed, (5) entire absence of remains of aquatic animals within the seam. Substitute, he said, negatives for affirmatives and affirmatives for negatives and the characteristics of cannel, which he regards as drift or allochthonous matter, are truly set forth.

In cannel, he added, scales, teeth and bones of fish are almost invariably present, and it is from cannel that our largest collection of coal-measure vertebrates have been obtained. Amphibian remains are more rare; ostracods are crowded in some places and lastly fresh-water shells such as *Carbonicola* are represented commonly not by the shells themselves, but by the flattened wrinkled epidermis, the calcareous shell having evidently been dissolved by the acids generated by decomposing vegetable matter. The ash content always is high, rising to 40 per cent before reaching the point at which it would be regarded as shale. The characteristics of cannel are consistent with the view that it originated from a mass of vegetation macerated in pools of water somewhat after the manner in which flax is retted.

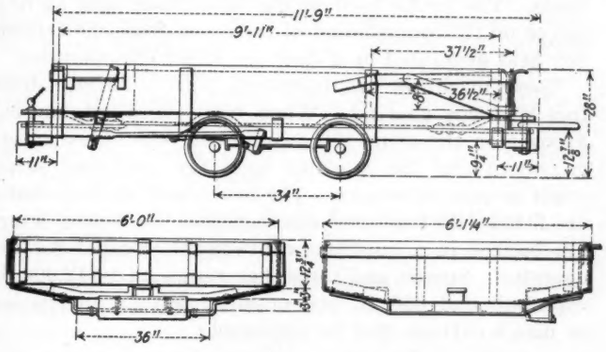
Sometimes the cannel is in unconformable relation to the underlying beds, as at the Abram colliery, Wigan, England, where it rests in one district upon true coal and in the course of about a mile encroaches first on the coal, then upon its underclay and, finally, having become 7 ft. in thickness, it rests upon a bed of shale underlying the underclay.

It commonly happens, added Professor Kendall, that the presence of a patch of cannel as a constitutent of a coal seam is accompanied by an increased thickness, even out of proportion to the magnitude of the cannel, and this irrespective of whether the cannel is above, within or below the true coal. This may be explained by the fact that the process of fermentation by which the cannel was produced reduced its volume more rapidly than the ordinary clay reduced that of the adjacent peat and so maintained a depression in which the plant débris of the peat bog could accumulate, but the ultimate effect of this fermentation was a less complete loss of hydrocarbons, and consequently, both because its contemporaneous loss was greater and its subsequent loss was less, the presence of a cannel component increases the thickness of a seam.

Huntington Show Suggests Modern Ways of Reducing Coal Cost—I

Typical West Virginia Mine Cars — Low Cars Permitting of Side Loading — Use of Band Brakes — Machine for Electrically Heating Rivets—Hoist for Long Slopes and Inclines

MUCH interest was exhibited in the Coal and Industrial Exposition held at Huntington, W. Va., Sept. 18-23, in the Chamber of Commerce Building. Lightning, it is said, seldom hits twice in the same spot, but the coal exposition has ventured for two consecutive years to descend on so small a town as Huntington. The rest of the country needs some of the enlightenment that has been so generously bestowed on this West Virginia town and it is certain that some other city will get it, as it was decided at a meeting of exhibitors to hold the show elsewhere in the coming



LOW STEEL CAR WITH END GATE AND BAND BRAKE

The top side plate and rear-end plate are of ⅜-in. steel and the flare, gunnel and front-end plates of ¼-in. steel. The capacity is 76 cu.ft. The track gage is 42 in. Hyatt roller-bearing wheels are provided.

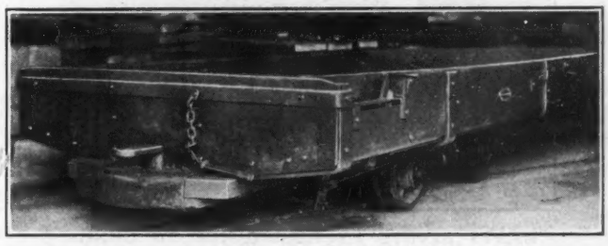
year. The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers, thus deserted by their exposition, decided to withhold a decision on next year's place of meeting till they found where the exposition was going to be held.

Prominent among the exhibits were four mine cars of mammoth proportions. They probably will carry but little coal, however, for apparently payment of coal by the carload instead of by the ton results in the filling of cars but little more than level full. The cars are, however, constructed to carry a maximum quantity of coal for a minimum height of body.

The American Car & Foundry Co. had a big all-steel car that was constructed for the Little War Creek Coal Co., at Iaeger, W. Va. Its weight is 4,400 lb., its length is 9 ft. inside and 10 ft. 8 in. over all, its width is 6 ft. and its height from the top of the rail to the top of the car, 3 ft. 2¼ in. Its capacity is 107 cu.ft. and its gage 44 in. The wheels, which are fitted with Hyatt roller bearings, project above the bottom of the car and are hooded with steel covers; to stiffen the sides three steel gusset plates are set on each side. They connect the sides of the car with its bottom. It will be dumped on a rotary dump.

Across the way might be noted a rival car constructed by the Kenova Mine Car Co. for the Red Jacket Consolidated Coal & Coke Co., at Red Jacket, W. Va. This, which was a composite car with sides of steel and a bottom of wood, like the other, had hooded wheels and two angle stiffening plates on each side. It holds 2½ tons when level full. Its dimensions are as follows: Weight, 3,800 lb.; inside length, 10 ft. 6 in.; width, 6 ft.; height above rail, 29 in.; capacity, 90 cu.ft.; wheels, 14 in. in diameter; track gage, 48 in.; wheelbase, 40 in. A spring drawbar, a swivel hitching and a Timken roller-bearing wheel of the exposed lynch-pin type were notable features.

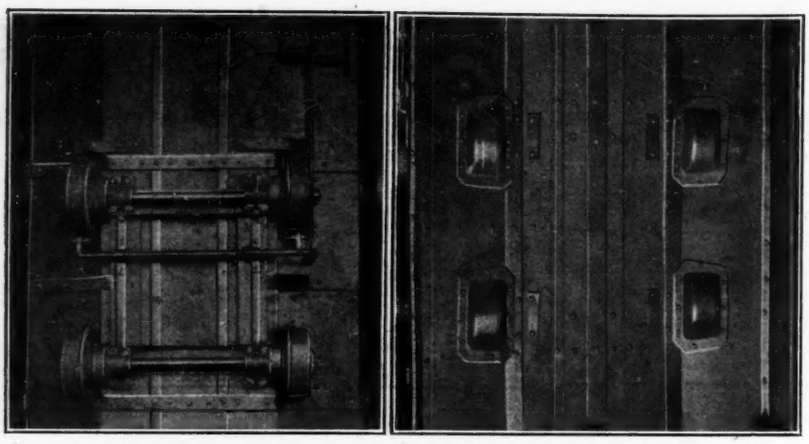
Only slightly smaller is the car made by the Watt Mining Car Wheel Co. for the Island Creek Coal Co. This car has a gage of 44½ in. for a track gage of an even 44 in. It has an 18-in. wheel, a straight-link hitching, Hyatt roller bearings and lifting end gate, being intended, unlike the other two cars, for end dumping. Its weight is 3,700 lb., its inside length 9 ft. 1¾ in., its over-all length 10 ft. 6¾ in., its inside width 5 ft. 5 in., its height above the rail over all 3 ft. 4½ in., its wheel-



SAME CAR SHOWING REAR END AND BRAKE HANDLE

The introduction of steel has made possible a general lowering of the car. The rise of the flaring plate is only 3 in. yet the increase in width it gives to the car body is 18 in. on each side. With a track gage of only 3 ft. 6 in. the internal width of the car is 6 ft. It can be loaded equally well at the side, the front and the end.

NOTE—The illustration forming part of the title depicts the booth of the Northeast Kentucky Association, which was a reproduction of the mouth of a mine in that section. The men grouped on the car were a number of anthracite mine workers who, dressed in overalls and mining caps with acetylene lamps, provided a large part of the excellent musical entertainment which enlivened the exposition.



VIEW OF CAR BOTTOM FROM BELOW AND FROM ABOVE

The first view is that from below and shows the band brake on the hind wheels. The second view is that from above. It shows the housings over the wheels. The tops of these wheels are actually above the level of the car bottom. As the car is for end dumping no gussets can be provided on the inside.

base 32 in. It holds 2½ tons when level full and 2.8 tons when loaded to a normal height.

It will be noted that modern mine cars are frequently riveted; not bolted. Rivets are less likely to become loose. Properly driven, they will hold permanently until a wreck of some sort subjects them to strains for which they have not been designed. Then the cars come to the shop, and the riveting must be renewed.

In this work the electric riveter of the American Car & Foundry Co. exhibited in the company's booth offers opportunities. The heat is, of course, not of the cheapest but it is confined to the rivet and not dissipated as in a furnace. There is no risk of burning a lot of rivets by leaving them in the fire. The heat is from the center out and not from the outer surface inward. Hence it lasts longer or else does not have to be made so intense to last as long. The rivet is in full view of the operator.

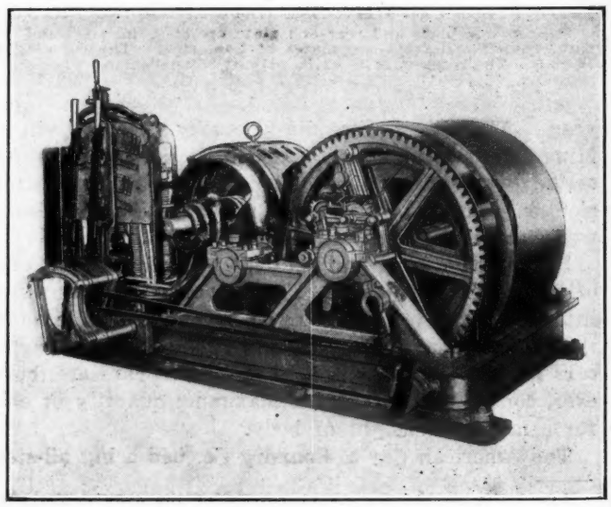
HEATS RIVETS BY RESISTANCE TO CURRENT

Dirt, gas, smoke and excessive heat are avoided by the use of this electric rivet heater that handles three rivets at a time. Too often rivets are wasted by overheating due to neglect by the boy or man doing the work. Rivets should not be heated to over 1,650 deg. Fahr. The core of an electrically heated rivet is hotter than the exterior. When heated in this manner it should not be brought to a white heat. It would seem that chain-cutter bits might be advantageously heated by this method.

In a booth near the entrance to the show was exhibited, by the Hockensmith Wheel & Mine Car Co., a car built for the Pond Creek By-Product Collieries Co., of Leekieville, Ky. Several illustrations are shown of it because, although it has certain qualities all its own, it is typical of the cars being used in West Virginia, a state where large loadings per man are made at most of the mines. The cars are quite low, this one being only 28 in. high. The height is kept low, usually not at all because the coal is thin, but because ease of loading favors a low car. It also saves injury to the coal in loading.

The band-friction double-reduction single-drum hoist of the Thomas Elevator Co. occupied another booth. It is intended for such work as sinking shafts, hauling cars up slopes or inclines or for other purposes where a machine with large drum and ample cable capacity is desired. It is fitted with a band friction on one end of the drum and a composition-lined band brake on the other. A band friction puts no end thrust on the bearings and is therefore especially advantageous on long hauls. The brake is of ample proportions and as it is placed on the opposite end of the drum from the friction any heat generated by it does not affect the operation.

These machines are furnished with a smooth drum face and cut gearing. When made with machine-cut grooves on the drum the friction may be locked in engagement and the machine used for operating skips, cages or cars in balance. The brake and friction shafts are fitted with babbitted bearings and the control levers are banked in a quadrant conveniently located for the operator. Speeds and capacities range up to 12,000 lb. rope pull and 600 ft. per minute. Either alternating or direct current may be employed.



BAND-FRICTION SINGLE-DRUM HOIST

Has a band-friction brake at one end of the drum and composition-lined band brake on the other. A band friction puts no end-thrust on the bearings and is therefore advantageous on long hauls.

Every Big Mine Should Have Its Locomotive Inspector

To Be Always "Fit" a Locomotive Must Be Inspected at Regular and Frequent Intervals—If Continuously Kept in Good Condition, with Hauling Loads Commensurate with Capacity, It Should Last Indefinitely

By W. M. Johnson*
Woodward, Ala.

ELECTRIC locomotives are now largely employed both in gaseous and non-gaseous mines for hauling coal from the working face to the pit mouth. These machines form the key to present-day coal production. They vary in size from four to thirty tons. Without them the output of some of the larger mines would be so seriously reduced that coal could not be mined economically. In fact to revert to mule haulage or other modes of transportation would mean disaster to the coal-mining industry.

Considering the thousands of electric locomotives that are put into the mines each year, the question naturally arises what percentage replaces worn-out equipment and what is installed in new development? This is not easily answered, as other considerations are immediately involved such as "What is the average life of a mine locomotive?" as well as many others.

Of course everyone experienced with mine locomotives will immediately answer that the life of an electric haulage motor depends entirely on the service it is called upon to perform. They believe that they have thus effectively answered the query. However, even if we restrict the scope of the question and limit the work of the locomotive to that commensurate with its size, so that the machine hauls loads proportionate to its capacity only and over track such as is normally found in coal mines, the question is not easily answered in a satisfactory manner.

Ancient Locomotives Are Rarely Seen

From time to time the technical papers have published photographs of electric locomotives of ancient vintage that have been in continuous service for twenty or more years and that are still as good as new, or are doing as much work as ever. Here again is an answer to the query, but is it not rather the exception than the rule that a locomotive should operate for twenty years and be as good as ever, without any change in structure, or with little or no expense for repair parts during that time?

As a matter of fact, coal company records of cost of operation and repairs to electric locomotives are for the most part average costs and cannot be used in a comparative way to estimate the life of such a machine. Neither can a yearly depreciation method be employed.

Again if new parts are being continually added to a locomotive, is it fair to estimate the life of the machine at twenty years, when as a matter of fact probably twice the cost of a new haulage motor or a capitalization amounting to the price of three locomotives has been spent during this period and its end finds the company possessed of a half or completely worn-out locomotive?

On what then does the life of an electric locomotive operating at normal load and over average trackage depend? The answer is: "On the thoroughness and regularity with which it is inspected and the promptness and excellence of the repairs made." The old adage, "It is easier to keep up than catch up," applies particularly to electric mine-haulage locomotives.

Consider your own mine. Are the electric locomotives used in it always in first-class condition, or are they over the pit a large part of the time? Is it cheaper to operate them in a hit-or-miss fashion until they go out of service for want of repairs, with the accompanying interruptions to haulage schedules and loss of tonnage or to keep them in such shape that they will maintain a 100-per cent efficient haulage schedule?

Railroad Locomotives Rigorously Inspected

Look at the great steam-railway systems on which the very existence of the country depends. Are they run in a hit-or-miss fashion? Decidedly not. A fast freight or passenger locomotive after a run of 100 or 200 miles is thoroughly examined, oiled and passed by competent inspectors before it is again called upon to perform service. Are electric mine locomotives, many of which travel 100 miles per day and some of which cover an equal distance both day and night, treated in a similar manner? Or are they run until they fall apart? Again I affirm that "the life of an electric locomotive varies directly as the completeness of inspection and the quality of repairs made."

Most mine owners will say: "Of course we inspect our electric locomotives. Our mine electrician both inspects and repairs them. In fact he does everything but operate them, and he could do that if necessary." But should the man who makes the inspection be the one to make the repairs also? Emphatically not. Man's characteristic tendency to do as little physical work as possible and "get by" is the reason for so saying.

Electrician Should Not Inspect Own Motors

The old biblical admonition to the effect that "a man can see the mote in his neighbor's eye but cannot see the beam in his own eye" is familiar to all. The same reasoning applies to permitting an electrician to make his own inspections. He soon will be making his inspection reports to suit his own convenience. And a report that does not embody a true statement of conditions is of less value than none at all, for it will convey an erroneous impression to the management.

In large operations with twenty or more electric locomotives in service an inspector is a necessity and will save his wages many times over in the course of a year. In the case of smaller companies working one or two mines and employing only a few locomotives, the proper scheme is to have the electrician from one mine act as the inspector for the other and vice versa. With a little friendly rivalry, it will be surprising to see the close scrutiny the locomotives will receive and to observe how delays, armature failures and kindred

*Electrical Superintendent, Woodward Iron Co.

WOODWARD IRON COMPANY

Mine Locomotive Inspection Report.

Locomotive No. 9 Location. No. 2 Mines. Make. Westc. Ser. No. 29176. Tonnage 8

Motorman. John West. REMARKS:

1. Side frames	X	
2. End frames	X	
3. Top Covers	X	
4. Headlights	O	String wire fuse in block.
5. Wheels-Axles	X	
6. Lateral-Front Axle	1/4	
7. Lateral-Rear Axle	3/16	
8. Journal Bearings	X	
9. Journal Boxes	X	
10. Axle Bearings	O	One cap bolt loose.
11. Brake Rigging	X	
12. Sand Rigging	O	One hose wire missing.
13. Are covers on all oil holes	X	
14. Are Bearings packed properly	O	Journal boxes need more waste.
15. Front Armature	X	
16. Front Brush Rigging	O	Pig tail burned off one brush.
17. Wiring on front motor	X	
18. Front armature bearings	X	
19. Rear armature	X	
20. Rear Brush Rigging	X	
21. Wiring rear motor	O	Field lead needs tape.
22. Rear armature bearings	X	
23. Are motor casings clean	X	
24. Locomotive springs	X	
25. Motor suspensions	O	One spring need replacement.
26. Controller frame	X	
27. Operating cylinder	X	
28. Reverse cylinder	X	
29. Operating fingers & board	X	
30. Reverse fingers & board	X	
31. Does controller show excessive burning.	Yes	Have electrician report motorman to mine supt.
32. Blow-out coil	X	
33. Arc deflectors	X	
34. Is loco. properly fused	X	
35. Size fuse link	300 Amp.	
36. Trolley wheel	R	Worn out.
37. Trolley harp	X	
38. Trolley pole head	X	
39. Pole cable	O	Damaged - needs tape.
40. Trolley pole	X	
41. Pole base	X	
42. Main cables	X	
43. Are motor leads equipped with soldered couplings.	X	
44. General cleanliness	O	Too much oil on brake screw.
45. Has loco. suitable resistance	X	
46. Condition of resistance	X	
47. Has motorman approved oil can	X	
48. Is oil can completely closed	X	
49. Is motorman using enough oil	X	
50. Is motorman using too much oil	O	See above.
51. Is motorman using proper oil	X	

Legend: X - Signifies O. K. and no explanation needed in remark column.
O - Need attention--remarks to explain.
R - Bad and needs replacement.

Inspector

Date
Night Shift.

Additional Remarks:

This motorman is abusing controller and has been warned on a previous occasion.

Would recommend his dismissal.

FORM TO BE FILLED FOR EACH LOCOMOTIVE INSPECTED
Inspection should be made biweekly or at shorter intervals

troubles will decrease slowly and steadily until, instead of being an accepted daily occurrence, they will become unusual.

An inspector, where the mines operate daily, can handle about twenty locomotives per week as a maximum allotment, provided these machines are not scattered over too great a territory. He can report on each machine twice weekly. My inspector handles thirty locomotives per week, equally divided between three mines. He works 10 hours per shift at night, six nights per week. He can thoroughly inspect, on the average, eight locomotives per shift, so that each week I have on my desk a complete statement of the actual condition of each machine. The mine electrician also receives a carbon copy of the inspection report the morning following. In this manner no time is lost in replacing any parts found needing attention.

To make the work of inspection as easy as possible, especially so far as writing is concerned, a printed form has been prepared arranged in pads so that a carbon copy is easily made. The form accompanying this article is an actual copy of an inspector's report. As may be seen, it requires little writing, yet conveys a complete record of conditions. These reports are likewise easily examined, as the status of any part requiring attention stands out prominently while that of those in good shape is automatically passed over at a glance.

This form is intended for use with a straight two-motor locomotive without reel attachment. It can easily be modified to meet the needs of any type, however, using the same symbolic scheme to reduce to a minimum the writing that the inspector is obliged to do.

I adopted this inspection system about a year ago. At that time one of our mines was producing 1,400 tons of coal per day with twelve locomotives in service. These machines were continually in and out of the pit for the renewal of armatures burned out by poling, for hot bearings, controller and brake trouble and numerous other misfortunes peculiar to electric mine locomotives. At the present time the same mine operates only nine locomotives, yet produces 2,300 to 2,400 tons per day. During the past six months not a single armature has failed, whereas prior to the adoption of this inspection system an average of one to two locomotive armatures were burned out per week. The same inspection scheme has been adopted for our coal-cutting machines, and the results obtained in the past half year have been highly gratifying.

How long will a locomotive last in mine service? At the present time we cannot estimate the life of our machines. As we are keeping them in first-class operating condition they should last indefinitely.

BY THE INSTALLATION of means for the control of air currents, by the installation of instruments of precision and by making a long series of calibrations, the experimental coal mine operated by the U. S. Bureau of Mines at Bruceton, Pa., near Pittsburgh, has been put in condition for a study of some fundamental factors that govern the ventilation of mines. In one of the rooms of the mine a lead disk 3 ft. in diameter has been placed against the coal. Thermocouples have been placed in this disk and also at various depths in the coal and shale roof for the purpose of studying the rate of flow of heat through coal and shale. Such data, when obtained, will be of value in the control of ventilation in deep metal mines. This work is under the general direction of G. S. Rice, and under the personal supervision of J. W. Paul, assisted by G. E. McElroy, H. P. Greenwald and H. C. Howarth.

American Mining Congress Considers Standardization, Taxation and Industrial Relations

Twenty-Fifth Annual Convention Held in Cleveland—Coal in Limelight —Seek Laws to Prevent Interference by Organizations of Employers or Employees with Production or Distribution of Necessities of Life

COAL was easily the headliner at the twenty-fifth annual convention of the American Mining Congress in Cleveland, Oct. 9 to 14. The cataclysmic events in coal's history during the past year and the present general movement, both internal and external, to reorganize the coal industry are responsible. During the five days of the convention, held in connection with a striking national exposition of mining methods and equipment in Cleveland's new and magnificent Public Auditorium, much was said which may have a lasting effect upon coal and its relations with the public. The convention program directed much attention to standardization throughout all mining, upon mine taxation, better industrial relations within all branches of the industry, and to oil shale and its future, but there is no gainsaying the fact that coal was in the spotlight.

Sidney J. Jennings, of New York, was elected president; D. B. Wentz, of Philadelphia, first vice-president; H. W. Seaman, of Chicago, second vice-president, and E. L. Doheny, of Los Angeles, third vice-president. Directors elected were D. B. Wentz, W. C. Doring, president of the Southern Wheel Co.; W. H. Lindsay, of Nashville, and A. J. Nason, of Chicago. The convention and mining exhibition in 1923 will be held in Milwaukee.

At the closing session on Friday the convention adopted a ringing resolution on the labor question, declaring that "laws should be made and enforced by all the power of the government that shall forever strip labor organizations as well as employers of the ability to interfere with production and distribution of the necessities of life." A resolution was adopted putting the influence of the American Mining Congress behind the Federal Coal Commission and authorizing a committee of seven from the congress to co-operate with the commission and with the coal operators.

Crowds Flock to New Auditorium

The convention and exposition drew mining men and others interested less directly from all over the country. A total of over 500 delegates registered but the throngs which flowed through the two immense floors almost full of exhibits in the Public Auditorium when the doors were open to the public would have indicated a much greater attendance. Cleveland itself contributed heavily to this crowd, for the great building is new and most of the taxpayers whose $6,500,000 built it have not yet seen its beautiful and spacious interior. It was generally admitted by exhibitors that they had never shown before in such a handsome and well-appointed building. Many of their displays were novel and most of them interesting and instructive.

Delegates began to register for the convention as early as Sunday morning, Oct. 9. The next day enrolment boomed as engineers and mining men arrived from everywhere. Short meetings of the boards of governors for the Southern and the Western divisions of the congress were the only program events of the morning, but in the afternoon the taxation conference, one of the important branches of the congress, began its series of meetings, which ran through the succeeding three days.

Monday evening the convention and exposition was formally opened with a program on the immense stage of the auditorium after a musical prelude on the municipal pipe organ played by Edwin Arthur Kraft and songs by Miss Rex Haller, soprano, and the famous "Anthracite Quartet" of hard-coal miners from Pennsylvania.

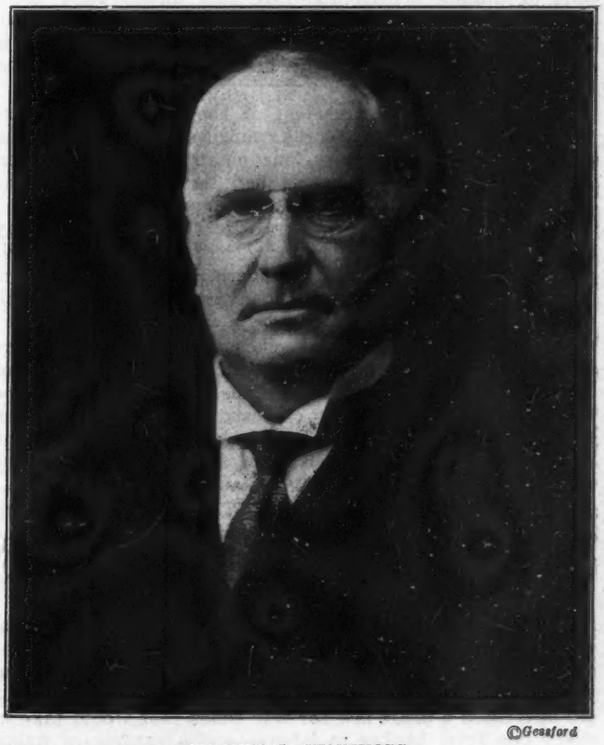
Newton D. Baker, Secretary of War during a part of Woodrow Wilson's presidency and now president of the Cleveland Chamber of Commerce, made the address of welcome, in which he declared than an obligation rests upon those in the mining industry to devise means of co-operating with each other, to take the public into their confidence, especially in matters relating to coal.

President Harding, unable to be present, sent a letter to Michael Gallagher, of Cleveland, chairman of the speakers' committee for the convention, in which he assured the mining industry of his interest in it and his confidence in the wisdom and leadership of the congress. The President's letter is shown in another column.

Most of Tuesday morning, when the second general conference of the convention was held, was devoted to the interests of metal mining. W. R. Woodford, president of the Rail & River Coal Co., presided. W. J. Loring, president of the congress, who was scheduled for an address, was absent, serving on a committee investigating the Argonaut mine disaster in California. Carmi Thompson, vice-president of the Tod-Stambaugh Co., of Cleveland, iron ore operators, and now a candidate for Governor of Ohio, spoke on "Some Requirements of the Iron Ore Industry." Gold was treated by H. W. Seaman, of Chicago, Ill., and Bruce C. Yates, of Lead, S. D., and a paper on prospecting methods was read by Walter H. Trask, of Denver, Col.

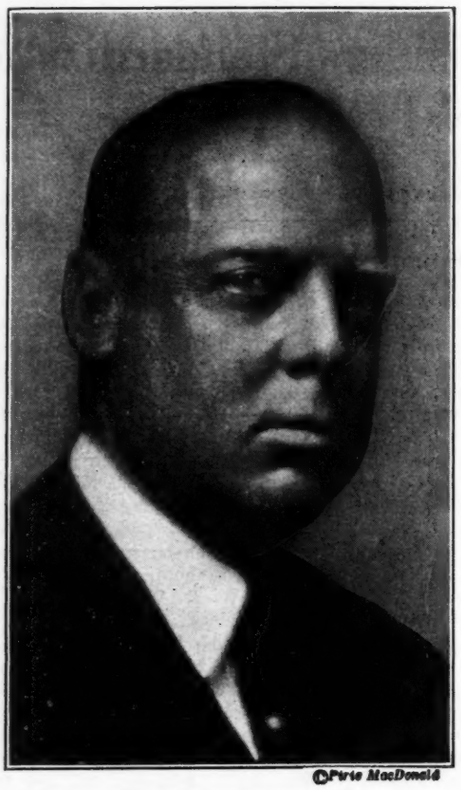
In the afternoon the first of the convention series of oil-shale conferences, presided over by Victor C. Alderson, of the Colorado School of Mines, was held, running parallel with the second mine taxation conference and the first of the standardization conferences. That evening the general session was devoted to "Industrial Co-operation," with John A. Penton presiding.

The principal address of the evening was delivered by



©Gessford

SIDNEY J. JENNINGS
President, American Mining Congress, 1923



COLONEL D. B. WENTZ
Re-elected First Vice-President, American Mining Congress

W. A. Grieves, vice-president of the Jeffrey Manufacturing Co., of Columbus, Ohio, a man well known for his firm belief in the value of encouraging a spirit of mutual helpfulness and confidence between employer and employee. He urged his hearers among employers of labor to remember the importance of the human element in their industry and to turn it to good account by educating their men in the principle of mutual dependence. He said unions have their place and should not be antagonized unnecessarily, but that their baneful effect can be offset by proper methods and a sane attitude by men in the head offices and down the line.

Arthur Young, vice-president of the International Harvester Co., described the works council system his company uses throughout its twenty-four plants, declaring that in three years only five appeals had been taken from the decisions of the joint council of workmen and bosses.

An important coal conference took place Wednesday morning, as reported elsewhere. The manufacturers' division of the congress lunched together that day at noon. In the afternoon both the mine taxation and the shale-oil conferences continued.

Wednesday evening, amid much jollity, the exhibitors held a smoker in a temporary dining room at one end of Machinery Hall, the lower floor of the auditorium. A troupe of entertainers, including an orchestra, a cartoonist, a dozen singers and dancers and two black boys who sang and danced and boxed humorously on a big platform in the center of the room won much applause.

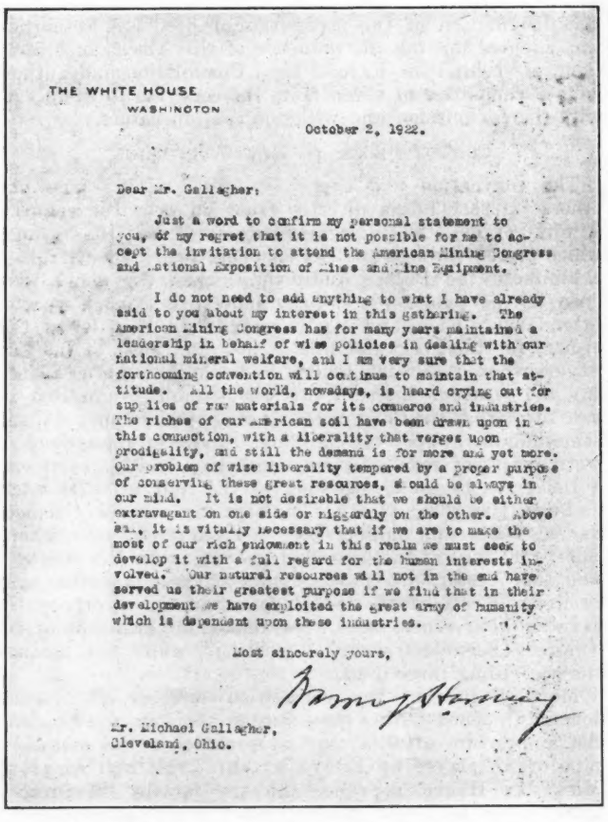
Standardization was given the floor on Thursday. Committee reports, the naming of which does not convey the interesting nature of their contents, occupied most of the day and evening sessions, but not to the exclusion of several addresses by prominent men.

Colonel L. H. Ruggles, who, as chief of the technical staff of the ordnance bureau of the War Department, passes on all matters of standardization, spoke in the afternoon on "Standardization as a Factor in Industrial Mobilization." He advocated a draft law for war times that would take in every one from banker to laborer and a scheme of fixing wages and profits that would "freeze wages and profits at figures obtaining when war was declared." That evening W. S. Culbertson, of the Tariff Commission, explained the new act, saying that in his opinion the provision permitting the President to change the schedules and make adjustments would do more to take the tariff out of politics for good than anything that has ever been done. Judge Crawford, of the Industrial Relations Court of Kansas, told of the progress made by that novel experiment in handling labor trouble and pointed to Alex Howat in jail as what they do in Kansas to stop strikes.

G. A. O'Reilly, vice-president of the Irving National Bank of New York, on Friday morning painted an optimistic picture of business conditions in this country and put himself on record as favoring the payment by European countries of their debts to the United States. F. W. Fenn, of the National Automobile Chamber of Commerce, spoke on the importance of motorized transport in mining. Herbert Wilson Smith, of the Mining Congress staff, spoke on the relation of a protective tariff to the mining industry. Friday afternoon was devoted to viewing the exhibits and to dressing for the banquet that night.

The banquet, always a feature of the annual gathering of the Mining Congress, was a gay affair, despite the muchly mentioned and greatly bemoaned absence of pre-Volstead refreshments. The toastmaster, Richard F. Grant, of the M. A. Hanna Co., wove his opening remarks around the old familiar saying, "Gone are the days." After he had everyone saddened he turned Elisha Lee, vice-president of the Pennsylvania R.R., loose. Mr. Lee reviewed the shopmen's strike and said that decentralization of the labor problem offered the only permanent solution. He urged that when a man entered the railroad service he give up the right to strike, and pointed out that the stockholder never has a strike when his earnings fall lower than he likes.

Ira E. Robinson, of the Interior Department, gave the assembly what he described as a "good, old fashioned" talk in the old Fourth of July, spreadeagle style, deprecating every modern tendency and extolling the Constitution and the liberty-loving patriots of the past.



THE WHITE HOUSE
WASHINGTON

October 2, 1922.

Dear Mr. Gallagher:

Just a word to confirm my personal statement to you, of my regret that it is not possible for me to accept the invitation to attend the American Mining Congress and National Exposition of Mines and Mine Equipment.

I do not need to add anything to what I have already said to you about my interest in this gathering. The American Mining Congress has for many years maintained a leadership in behalf of wise policies in dealing with our national mineral welfare, and I am very sure that the forthcoming convention will continue to maintain that attitude. All the world, nowadays, is heard crying out for supplies of raw materials for its commerce and industries. The riches of our American soil have been drawn upon in this connection, with a liberality that verges upon prodigality, and still the demand is for more and yet more. Our problem of wise liberality tempered by a proper purpose of conserving these great resources, should be always in our mind. It is not desirable that we should be either extravagant on one side or niggardly on the other. Above all, it is vitally necessary that if we are to make the most of our rich endowment in this realm we must seek to develop it with a full regard for the human interests involved. Our natural resources will not in the end have served us their greatest purpose if we find that in their development we have exploited the great army of humanity which is dependent upon these industries.

Most sincerely yours,

Warren G. Harding

Mr. Michael Gallagher,
Cleveland, Ohio.

LETTER FROM PRESIDENT HARDING
Chief Executive's message to the twenty-fifth anniversary of the American Mining Congress, Cleveland, Ohio, Oct. 9-14, 1922.

How Remedy Tax Evils That Beset Mine Properties?

Keen interest in mine taxation was well sustained throughout the twenty-fifth annual convention of the American Mining Congress at Cleveland, Oct. 9 to 14. In the series of taxation conferences running through the first three days the troublous question of how to remedy tax evils which exist in most mining regions was threshed out from many angles, and committee reports, some of them voluminous, were read. As a general result the congress veered its course from state action to federal, on the theory that while the root of a good deal of the evil in mine taxation may be local the first remedy lies largely in the federal government.

So the congress after resolving that the load of federal expenditures be greatly reduced, realigned itself for future taxation activity. A committee is to be appointed made up of at least one well-informed representative in each mining territory to act with the division of taxation so as to better maintain the congress' contact with tax matters everywhere, and the division is to proceed with the collection of a comprehensive library on the subject, to be maintained at Washington headquarters. Already a bibliography has been compiled by McK. W. Kriegh, chief of the tax division, which will be used as a basis for the building of the library.

The congress considered it a healthy sign of federal right-mindedness that two government officials were sent to the tax conferences to encourage better co-operation between mine owners and Washington. E. H. Batson, deputy commissioner in charge of the income tax unit of the U. S. Bureau of Internal Revenue, was one of these. He explained in detail and clearly some of the problems his unit meets and which previously have puzzled many mine men. He showed how the bureau slowly had built up a working system which at last is able to cope with the involutions of mine taxation and said that by 1923 the government will have cleaned up all of the excess profits tax cases. Mr. Kriegh said this would release approximately $200,000,000 capital now tied up. This release, he declared, would prove a great boon to the mining industry. The second government tax official present was Albert H. Fay, chief of the natural resources division of the Bureau of Internal Revenue.

Mining Classified as a Going Business

Carmi Thompson, of Cleveland, an iron-ore operator, who is candidate for Governor of Ohio, paid high tribute to Mr. Fay.

"Mr. Fay does all that a good man in his position can," said Mr. Thompson, "but he is handicapped by an unfair law—a law that is unfair because it classifies mining as a going business when it really is a liquidating one. The more successful the mining operation, the faster it liquidates."

At the Monday taxation conference, which opened the tax program at the convention, reports on various state tax methods were read and discussed. The central unit of the congress' tax committee reported its inability to recommend any uniform system of mine taxation for the whole country because of the wide variations of method now in use by states. But it suggested that a uniform general system be worked out to include the taxation of mines. The tax interweaving of mining and other properties is such that separation is out of the question. The committee declared that the immediate need of tax remedy is great, remarking incidentally that there is much underestimating of the amount of taxes paid by mines, and that the industry suffers by reason of such estimates. It suggested that while it is difficult now to combat such errors made in defence of high mine tax rates, a library of tax information such as the congress contemplates creating should end this embarrassment.

Hammering home the idea that the present rather chaotic condition of mine-tax matters is expensive to the industry, an estimate was made that the 18,000 mining companies of the country paid out more than $2,000,000 to prepare and make their income and capital stock tax returns in 1921 and that adjustments cost the companies a total of approximately $23,000,000 more, bringing the total cost to at least $25,000,000 for that one year. The remaining sessions of the conference were intended to bring out possible remedies for the tax situation, so that this cost could be reduced.

Paul Armitage, of New York, who presided at most of the tax conferences, on Tuesday read an exhaustive paper on "Distributions from the Depletion Reserve Under the Federal Tax Laws," elucidating the laws on the subject passed since 1913 and now controlling. He remarked that there still is some doubt as to whether a quota of the capital invested in mines must be debited against annual profits to calculate net profits, but that this is not vital because since 1916 the government income tax laws make complete allowance for depletion. There is so much difference of opinion, however, over methods to be used in arriving at the proper annual allowance for depletion that Mr. Armitage suggested a committee of the Mining Congress take up the question with the U. S. Commissioner of Internal Revenue and the Division of Natural Resources. R. V. Norris, a well-known mining engineer of Wilkes-Barre, Pa., presented a discussion on the valuation of mine properties.

Progress in Mine Accounting Methods

At the same session T. O. McGrath, of Bisbee, Ariz., a recognized authority on mine accounting, presented a progress report of his committee on mine accounting methods in relation to federal taxes, and W. R. Ingalls, of New York, addressed the conference on "Mine Taxation in Louisiana." Mr. McGrath's committee held that since the mining industry has never standardized its accounting and costing methods, it was only natural that the Treasury Department go ahead and crystallize its regulations whether the mine men agree with them or not; so the committee recommended that uniformity be arrived at within the industry. On Wednesday George E. Holmes, of New York City, author of "Holmes—Federal Taxes" and chairman of the congress' special committee on state taxation, spoke on "Invested Capital of Mining Corporations." Robert N. Miller, a former solicitor of internal revenue for the Treasury Department, explained a series of special and significant cases under recent revenue acts and Mr. Kriegh, of the congress' tax division, clarified many points on proper procedure in effecting settlements and compromises with the Commissioner of Internal Revenue.

The following resolution on state taxation was introduced by the tax conference:

Resolved that the report of the special committee on state taxation be accepted as read at this conference and that the thanks of the American Mining Congress be extended to the members of said committee and to those who co-operated with them.

Further resolved that since it seems impossible to obtain uniformity in mine taxation until such time as the various states agree to uniformity in the principles of general property taxation, the subject of improvement in methods of local taxation of mines be referred to the tax committees of the several chapters of the American Mining Congress.

Further resolved that subjects of general interest in mine taxation be referred to the standing tax committee, with power to confer with and aid the tax committees of the several chapters; and

Be it further resolved that a general tax committee be created to be composed of one member from each state, to co-operate with the standing tax committee of the American Mining Congress on all matters of general interest in taxation. The members and officers of the standing tax committee of the national organization shall be ex-officio members and officers of such general committee; and

Resolved that the Board of Governors of the several divisions appoint at this session, or as soon thereafter as practicable, from each state within their jurisdiction, one man to be a member of such general tax committee, and that where a state is beyond the jurisdiction of the Board of Governors the standing tax committee be authorized to select from each of such states one man to act on such general committee.

Problems of Operating Men

Edited by James T. Beard

Regarding the Use of Booster Fans in Mines

Instances Where the Use of Booster Fans Becomes a Necessity—Other Cases the Result of Bad Management —Need of an Efficient Mine Superintendent or Manager

FROM time to time there have appeared, in *Coal Age*, numerous references to the use of booster fans for improving the ventilation in certain mines. In offering the following remarks, it is not my desire to refute the claims that have been advanced as to the advantage gained by the installation of such a fan in any particular mine.

Undoubtedly, there are instances where it becomes necessary to set up a small blower or booster, in a section of a mine that is about to be abandoned, and where it is impracticable to incur any unnecessary expense to improve the ventilation in that section. But, the air being bad, it is realized that something must be done to improve the condition where the men must work for a time longer.

While this is true in a few cases, it appears there are many instances where booster fans have been installed as a supplementary unit, in providing the required circulation of air in the mine. My observation and experience warrants me in saying that all such cases are solely the result of bad management.

Proper Plan and Management Will Obviate Need of Boosters

In my opinion, if a mine is properly laid out and its air-courses and passageways timbered, cleaned and kept free of all obstructions to the flow of air, no occasion will arise calling for the installation of a booster fan in order to maintain the required amount of air in the working places.

Wherever a booster is found set up at some point back in a mine, it is safe to say that the possibilities are there is some fault somewhere. The mine may be an old operation that has been worked for fifteen or twenty years and has been in charge of, perhaps, ten or twelve different foremen, many of whom have taken little interest in keeping up the mine with an eye to its future development.

Some of these foremen may not have anticipated staying in the place longer than to give them an opportunity to secure a position elsewhere. In every such case, it is easy to imagine that the mine would be allowed to get into bad shape in a short time, because nothing is done to prevent it.

The chief desire of a temporary foreman of this kind is to keep a low cost-sheet and put out cheap coal. In order to do that, he allows dirt to accumulate on the roads; falls of roof in the air-courses go unheeded; timbering of entries is neglected and complaints of bad air in the working places are frequent.

Under these conditions, there is sure to be evidence of bad management everywhere throughout the mine. This will continue until affairs take a turn and the officials wake up to the idea that a change of foremen is necessary. It is wholly to the advantage of a coal company to employ an efficient and reliable foreman—one whom they can retain in permanent charge of the mine.

Business Foremen Needed

If a business man of intelligence and experience is needed in any position in a coal operation, it is in the position of mine foreman. Personally, I have seen much money wasted through careless and indifferent management on the part of the foreman in charge. For one reason or another, foremen are often prone to retain more men than they require and, yet, the mine is not kept in the best working condition.

No foreman is efficient unless he keeps the mine in his charge in good working condition at all times and plans the work with a view to the future development of the property. As the workings of a mine are extended, the foreman must be able to provide separate air splits that will insure good ventilation at the working faces. To do this, he must have a thorough knowledge of the theory and practice of ventilation.

Inefficiency Quickly Shown

As may be inferred from my previous remarks, inefficiency on the part of a foreman in charge of a mine will show itself quickly through the bad results obtained in its operation. This may not appear in a day, or a month. In some cases, it may require a year or more to prove the inefficiency of a mine foreman, unless the management are keen observers and have a thorough knowledge of the practical operation of the mine, and the needs of its future development.

The shrinkage of output and the daily mounting of the cost-sheet are, of course, warnings of breakers ahead; but, often, present fears are allayed by the plausible excuses of the mine foreman. It is then up to the management to form their own independent opinions, and determine whether the fault lies with the foreman, or that the condition is unavoidable.

In closing, let me say that dirty tracks, falls of roof blocking the air-courses, accumulation of water at the working faces, or on the main haulage roads, cannot be explained away by excuses, provided the foreman has the means at hand for doing the work required.

O. Kennett,
Hillside, Ky. Mine Foreman.

Relation of Foremen and Miners

Need of training all miners to have confidence in themselves—Two types of mine foremen—Two types of miners.

READING the article "Gaining the Confidence of Men," by G. W. Breeden, *Coal Age*, Aug. 24, p. 290, it occurred to me that it would be a good idea to inspire our miners to have more confidence in themselves, and rely more on their own judgment in the placing of their shots and the standing of their timbers. Teach them to take proper care of their working places, and not to depend on the foreman to tell them how and when to do these things.

In my opinion, it is a good thing for a miner to confer with his boss when he visits his place, and ask for his ideas in regard to standing timbers under dangerous top. But a miner should never wait for him to point out where timbers should be stood to make the place safe.

Train Miners to Independence

Miners should be trained to be careful and watch for any dangerous conditions that may appear. Then, without waiting for the boss to tell them what to do, the man should proceed at once to make himself safe.

It seems to me that the efficiency of miners who stand timbers only when and where the foreman says, or depend on him to arrange their shots, cannot be estimated very highly. It is all right for a miner to have the utmost confidence in his foreman's judgment, in regard to standing timbers and arranging and charging shots; but every miner should be trained to take care of himself without being told to do so.

The foreman should be a man of experience, whose judgment can be re-

lied on in almost any emergency arising in connection with the mine work; but that does not signify that he should know where timbers are needed in a working place any better than the old experienced miner who works there every day.

Training a miner to depend on his foreman to tell him what things he must do to keep his place safe has a tendency to cause him to loose confidence in himself in that respect. A miner who has no confidence in his own ability to stand timbers and arrange his shots in working his place is worthless as a mine worker.

TYPE OF FOREMAN ON WHOM MINERS LEARN TO DEPEND

Competency and ability on the part of the foreman to fill the position he holds and honesty in dealings with his men will gain their abiding confidence. Consider two foremen, for example: Of one it can be said, he is a kind and pleasant fellow; but he does not know anything about practical mining. Can you rely on his judgment, or on anything he may say regarding the work? He is ready to make promises, and just as ready to forget them. Such a foreman cannot gain or long retain the confidence of his men.

Of the other foreman it can be said, he is rather an unsocial man, or distant in his manner; but when it comes to business you can rely on what he says. His word is as good as his bond. He talks but little, but means all he says. His judgment about the work is good; and he gives it when and where it is needed. Miners will have confidence in such a foreman, though he may be close and strict in his dealings with them—friendly but never intimate.

TWO TYPES OF MINERS COMPARED

In a certain coal mine, there are two miners employed. One of these is not skilled in his profession, although he has been in the mines for years. He is incompetent to do work where care and the exercise of good judgment are required. The other miner has not been in the mines many years, and yet he is skilled and competent to do any kind of work pertaining to the mine. He is a good workman.

If in a section of this mine there is a dangerous and difficult piece of timbering to be done, which of these men will the foreman choose for the work? Will he select the miner first named? Can he have confidence in his judgment and ability to perform such work? The answer is, No!

Some miners profess great friendship and respect for their foreman as long as they are shown special favors; but when there are no favors coming, their regard for him wanes. The better element of miners, however, have confidence in the foreman who is honest and capable; and who, in a business way, looks after the welfare, interest and safety of all and treats all his men with equal fairness in his dealings. A foreman who sacrifices honor and principle to gain the favor and confidence of a few of his men will soon lose the respect and confidence of the better and more intelligent element.

PRACTICE OF THE GOLDEN RULE THE KEY TO MUTUAL CONFIDENCE

In the article previously mentioned, Mr. Breeden says in substance that his experience as mine foreman has taught him to treat his men as he would have them treat him under similar circumstances. Let me add, the practice of that principle is the key that will unlock the door to a mutual and abiding confidence between men and officials. The hope of industrial peace is to be found in the practice of the Golden Rule.

JOHN ROSE,
Former State Mine Inspector.
Dayton, Tenn.

Longwall Retreating in the Panel System

Butt headings driven up the pitch—Panels worked out by the retreating method of mining.

REFERRING to my previous letter, describing a method of handling a fire situation in a longwall mine, *Coal Age*, Aug. 17, p. 248, it appears I did not make myself clear in regard to the method of working out the panel.

Starting on the main headings, each panel is worked by driving three pairs of butt headings directly up the pitch. Each pair of headings was driven on 50-ft. centers, leaving 245 ft. of solid coal on each side of each pair of butts. It is stated that these pillars were to be worked out on the longwall retreating system. In my opinion, the area within the panel could not be worked on the retreating system, until other developments had been driven to the outer edge of the panel area.

My idea was to drive longwall advancing faces across the pitch, starting left and right from the butt entries and leaving the necessary gateways for switches, at suitable intervals, on each pair of butts.

THOMAS ALLEN.
Mine Rescue Station,
Mt. Harris, Colo.

[It is difficult to understand how working out a panel, by extending a longwall advancing face across the pitch, to the right and left of each pair of butt headings within the panel, would eliminate the danger of fire due to heating of gob areas. It was not so stated in the description given by this correspondent, in his previous letter.

The purpose and aim of the previous letter was, evidently, as there stated, to overcome the danger of the heating of the gob by reason of the mixture of the fine coal, slack and clay cuttings formed in mining the coal. It should be apparent that there is more danger in employing the advancing system of longwall, in working out the panel, than by driving the butt headings up to the barrier pillar, at the top of the panel, and then working back the pillars on the retreating system.

By the retreating method, it is clear there are no gob areas to be left between the working face and the gangway, as in the advancing system. The retreating method of working out the panel wholly eliminates this condition and overcomes the danger due to the heating of the gob, which was understood to be the plan suggested by this correspondent.—Editor.]

Firing Shots from Surface After Men Have Left Mine

System of long standing still in use—All shots fired from the surface by electricity—Current taken from the generator in the power house.

IT WAS with much interest and pleasure that I read the recent reference to the custom of firing all shots from the surface after the men have left the mine, which has been in use at the Dawson mine, on the Stag Canon Branch, of the Phelps Dodge Corporation.

Permit me to say that this system, which has been in vogue for a long time at this mine, is still in use alhougth the firing, now, is not done by battery; but the current is taken from the generator in the power house. As the mine was extended, this change was found to be necessary, in order to provide a stronger current than could be obtained from the hand battery first used. Notice of the continued use of this system at this time I thought would be of interest to readers. The fact of the practice being of long standing is evidence in itself of the satisfaction it has given.

CHIEF ADVANTAGE GAINED BY FIRING SHOTS FROM THE SURFACE

It is unnecessary to refer to the chief advantage derived by the adoption of this method of firing shots in the mine, by which all accidents to men and to shotfirers are eliminated. As has been stated, the use of permissible explosives, in place of black powder, practically eliminates the danger of fire being started by the shooting.

However, as a further precaution, fire runners should enter and examine the mine to see that no such danger exists, shortly after the shots have been fired. Time must be given, only, for the air current to sweep away the gases produced by the shots.

W. F. MURRAY,
Dawson, N. M. Safety Engineer.

Charging Holes With Steel-Headed Tamping Bars

Steel tamping bars dangerous under any conditions—Danger greatly increased if coal contains sulphur—Charging a hole with loose powder a dangerous practice—Tamp all holes with clay.

READING a recent reference to the blasting of coal in mines, in respect to the dangers attending that work, I am reminded of one or two dangerous practices to which, I believe, attention has not as yet been drawn.

The first point I would mention, in this connection, is the use of steel-headed tamping bars. In spite of all

that has been said, the practice has grown to a considerable extent in this district. It would seem that, for their own safety, miners would discontinue the use of such bars and employ wooden ones instead.

In our mines the coal contains much sulphur, both in the form of sulphur balls and streaks of sulphur. This makes the use of steel bars, for tamping shots, all the more dangerous and should be a warning to mine officials and miners that such bars should be discarded.

Striking a Sulphur Ball

When a miner, in drilling a hole, strikes a sulphur ball he makes every effort to pass the obstruction, if possible. At times, this results in deflecting the drill and produces a slight curve in the hole; but, in any event, the sulphur ball remains exposed at the side of the hole.

Now, if such a hole is tamped with a steel bar or a bar with a steel head, there is every chance of a spark being struck when the bar comes in contact with the sulphur ball. The probable result is an explosion of the charge in the hole and the injury or death of the miner. Such accidents are common in our mines, although they are wholly avoidable if proper precautions are taken and steel tamping bars prohibited.

Again, this coal contains many small streaks of sulphur so that the auger is drilling in sulphur, more or less, the full length of the hole. For that reason, the danger of striking a spark when tamping the hole with a steel bar is all the greater.

Drilling with a Worn Bit

Incidentally, let me refer here to the increased danger when a miner resorts to another dangerous practice. It often happens that his auger has become so worn that the diameter of the hole is too small to allow the cartridge to be pushed safely to the bottom of the hole.

In that event, what does the miner do? Nine out of ten, perhaps ninety-nine out of a hundred, will open the cartridge and proceed to pour it as best one can into the hole, at the same time pushing it back to the bottom of the hole with the tamping bar. Then, it is a miracle if the man escapes the terrible results of the chances he is taking.

Now considering these dangers, so common in blasting coal, every mining man will agree that the charging of a hole with loose powder and the use of a steel-headed tamping bar should be absolutely prohibited by the mine rules and regulations, regardless of whether the same are forbidden by the mining laws of the state.

Allow me to suggest that every coal operator should keep on hand, in their supply houses, tamping bars with copper or babbitt heads and sell the same to those miners who are not previously equipped with such bars. It should be an invariable rule that no miner will be permitted to use another kind of bar, excepting it be a wooden one.

In my opinion, it should be the duty of the district mine inspector, in making his rounds of the working places when inspecting a mine, to see that the miner is supplied with a suitable tamping bar. He should urge that these be kept on hand in the supply house, and sold to any miner who is not already supplied. The bars should be sold to the miner at cost, with freight charges added.

In the same connection, let me suggest that coal companies should supply their miners with clay or other incombustible material for tamping their shots. This will go far to obviate the use of fine coal dust and slack for that purpose, which is too often the practice of miners where other material is not at hand.

It is hardly necessary to repeat what has been so often urged in *Coal Age*, that competent shotfirers should be employed whose duties it would be to examine, charge and fire all shots in the mine, except such shots as are, in their judgment, for any reason unsafe.

Every miner should be instructed to remove the fine coal cuttings, after drilling a hole in his place. In most cases, arrangements should be made for taking these cuttings out of the mine. Where dustproof cars are in use, the cuttings can be loaded out with the coal.

In closing, let me say that when these and a few other precautions necessary for safety are followed by miners and the officials in charge of the mine, we shall see a gradually decreasing percentage of mine accidents. What is needed is the strict enforcement of rules for safety.

Oscar H. Jones,
Wilder, Tenn. Fentress Coal Co.

Inquiries Of General Interest

When To Install a Booster Fan

Conditions That Make It Advisable to Install a Booster in a Mine—Such a Fan Only to Be Regarded As a Makeshift —Dangers Incident to the Installation of a Booster Fan

KINDLY permit me to ask, through the columns of *Coal Age*, for a little information regarding the installation of booster fans in mines. I am desirous of learning the advantages and disadvantages of installing such a fan.

Owing to the increasing difficulty of ventilating the workings in our mine, we have had before us the proposition of installing a booster fan at some advantageous point in the mine. The seam of coal we are working has an inclination equal to a grade of 25 per cent. The slope has reached a depth of 6,000 ft. The coal is being worked out on the room-and-pillar system.

If it is practicable to install a booster fan, I would like to know at what point in the mine it should be placed. Also, how can I ascertain if the return airway is of sufficient size to carry the increased volume of air desired. It is important to know this before attempting to make the installation.

Mine Manager.
Kemmerer, Wyoming.

It is strange that this question, regarding the advisability of installing a booster fan in a mine, is so often asked when there is but one answer to be given. The installation of a booster fan should never be considered by a mine management if it is to be operated as a unit of the ventilating system. It should be understood that the office of a booster, in any event, is only intermediary. It cannot act to materially increase the circulation throughout a mine. Its effect is only local, the fan acting to draw the air from the main current and send it coursing through a section of the mine where the ventilation is slack owing to leakage of stoppings back on the road.

There are conditions that arise from time to time, however, when the ventilation has become poor, in a section of a mine that is nearing completion and about to be abandoned. In order to improve the circulation in this portion of the mine it would be necessary to go to considerable expense in the repairing of old leaky stoppings. To avoid this expense and yet improve the circulation of air in the section, recourse is often had to the installation of a booster fan and this is placed near the mouth of the intake airway, in that section.

The great disadvantage of making this installation is the constant watch and care required to see that the fan is kept running. A booster is commonly operated by a small electric motor, which is dependent on the power supplied to it through a conductor. A fall of roof breaking the wire will put the fan out of commission; or any neglect on the part of the attendant whose duty it is to look after the fan will have its effect to reduce the circulation in the section it is supposed to ventilate.

The trouble may occur after the fireboss has examined the section and before the men enter for work, with the result that gas may have accumulated

in dangerous quantities in the working faces. Therefore, at the best, a booster fan should only be regarded as a makeshift, for the purpose of avoiding expensive repairs in a portion of the mine that is about finished.

It is unnecessary to dwell further on the dangers that follow in the wake of installing a booster fan at any important point in the mine. In case of an explosion in the mine, such a fan is of little or no assistance to the rescuers who would enter the mine. The sparking of the motor is an added danger, in a mine generating gas. It is a safe general rule never to place any ventilating apparatus at any other point than on the surface where it will be subject to constant supervision and accessible at all times.

Examination Questions Answered

Indiana Mine Bosses' Examination, Indianapolis, 1922

(*Selected Questions*)

QUESTION—*Give five causes of accidents that occur on haulageways, and state the method to prevent them.*

ANSWER—1. Accidents to persons walking the road and being caught by a car or trip. 2. Accidents due to men and boys riding on loaded trips, contrary to the regulations of the mine. 3. Accidents to motormen and trip-riders when cars are derailed, causing a wreck. 4. Accidents due to cars standing on a room switch where the track is supposed to be clear for the motorman. 5. Collision of cars by reason of faulty schedules, or disobedience of orders by motormen and drivers.

To prevent these accidents from occurring: 1. Provide ample clearing space on one side of the track and refuge holes at short distances apart, kept whitewashed and free from all obstructions. Every trip should have a warning gong or other means of telling the approach of danger. 2. Enforce strict regulations in regard to persons riding loaded trips, and provide suitable penalties for violation of the rules. 3. Keep all haulage roads, tracks and switches in good condition, and establish a maximum speed for motormen hauling cars and trips. 4. Allow no cars to be left standing at the mouths of rooms, unless they are securely blocked to prevent their running out onto the main road. 5. Have a good schedule for the running of cars or trips and enforce strict regulations regarding the maximum speed of hauling.

QUESTION—*Give five safety precautions that a miner should observe on going to his working place at the face.*

ANSWER—1. A miner should enter his place with caution, observing carefully the condition of the roof and timbers as he proceeds. 2. If he has brought his powder with him, on coming into the mine, he must first put it in a safe place before proceeding. 3. He should look for the mark left by the fireboss, showing that the place has been examined and found safe. 4. Unless the mine is known to be free from gas, every miner should make a test to ascertain that no gas is present at the roof or in cavities where it might lodge. 5. Before starting to load his coal, the miner must set any timbers that may have been discharged by shots the night before.

QUESTION—(*a*) *What is the law respecting air measurement in the mine?* (*b*) *What advantage is such a measurement?*

ANSWER—(a) The Indiana Mine Law (Chap. 258, Sec. 11) requires the mine boss to measure the air current, at least once a week, at the inlet and outlet of the mine and at or near the face of all entries; and keep a record of such measurements in a book provided for that purpose, said book to be open for the inspection of the inspector of mines. He must also, on or about the first day of each month, mail to the inspector a true copy of the air measurements taken, stating the number of persons employed, the number of mules and horses, and number of days worked in each month. Separate air splits must be provided for each fifty persons at work in the mine; and the law authorizes the inspector to require a separate air split for a less number of persons if, in his judgment, conditions make it necessary; and to require that any desired changes for the improvement of the ventilation be made within a reasonable time; or he may withdraw the men if this is not done.

The law has the advantage that the measurements taken at the points designated show how much of the air current reaches the working faces; and, by limiting the number of men working on a single air split, the law provides a safeguard against too high a velocity of the air sweeping the working faces.

QUESTION—*What are the causes of dust explosions in a mine, and what is the best known method to prevent them?*

ANSWER—The chief causes of dust explosions are: The excessive use of powder in blasting the coal; failure to remove the fine cuttings in machine mining; neglect to clean up roads and air-courses and remove accumulations of dust in the working places. To prevent these occurrences, permissible powder should be used and the blasting performed by competent shotfirers. No accumulations of dust should be permitted at the working faces throughout the mine. Roadways and air-courses should be cleaned, at regular short intervals, and an effective spraying system installed in dusty mines where the coal is highly inflammable.

QUESTION—*In what way would you provide for the protection of your men from falling roof?*

ANSWER—Frequent careful inspection of the working places, by the foreman, assistant foreman, safety inspectors and firebosses; and the enforcement of strict rules and regulations regarding the setting of timber in working places, will go far toward protecting the men from roof falls at the working face. Particular attention must be given to the work of drawing pillars. All workers must be carefully instructed in respect to making themselves safe. In addition, an ample supply of suitable timber must be kept in all working places, ready to use when needed. The most effective safety device known, however, is a careful man.

QUESTION—*What is the best and safest way to detect the condition of the roof?*

ANSWER—Besides the usual method of sounding the roof with a pick, holding one hand against the roof while striking the blow, to detect any tremor or hollow sound that would indicate an unsafe condition, it is important to make thorough inspection to see if any slips or fault lines are present. If these are found they must be carefully studied and means taken to avoid accidents therefrom.

QUESTION—*What is the danger arising from working a mine adjoining an abandoned mine?*

ANSWER—The abandoned workings may contain accumulations of water or gas that would flood the live workings and endanger the men should a place break into the old works. In order to minimize this danger drillholes must be kept in advance of the faces of all places approaching old workings that have been abandoned. No reliance should be placed on the accuracy of surveys of such mines.

QUESTION—*Give method of procedure in case an explosion occurred in a mine of which you had charge, and the ventilating devices have been injured and men must be rescued.*

ANSWER—Call for volunteers and select the most experienced men to form rescue parties. Make such temporary repairs as are necessary to restore the ventilating current. The rescuers, equipped with safety lamps and wearing breathing apparatus, if such is available, must enter the mine with the air and proceed with caution, making only such repairs as may be necessary to restore the current. Send at once for physicians and other assistants.

British Household Coal Prices Now 63 Per Cent Higher Than Before War

Actual pit-head price of those qualities of coal most largely used by the bulk of householders in Great Britain is considerably less than one-half of the total, as shown in the following table:

	s.	d.
Pit price	19	0
Railway rate to London	9	6
Wagon hire	2	0
Distribution charges	12	6
(Including retailer's profits)	43	0

The distribution charge includes loaders' and car mens' wages, cartage expenses, sacks, siding rents, salaries and establishment charges and profits.

Derby Brights are sold at an additional shilling per ton, the pit-head price being a shilling more than that of the fuel previously mentioned. In 1913 the pit-head price of this fuel was 13s., railway rate and wagon hire amounted to 7s. 4d., and distribution charges 6s. 8d., the total making 27s. The present price is thus about 63 per cent above pre-war quotations.

Kentuckians to Consider Mine Problems

Under the leadership of A. G. Spillman, general superintendent of the St. Bernard Mining Co., Earlington, Ky., their president, the Kentucky Mining Institute will assemble, Nov. 3 and 4, at the Seelbach Hotel, Louisville, Ky., to discuss mining problems with special reference to the needs of their industry at the mines of their state.

Two committees will report, one on the preparation of coal and the other on coal mining machinery, the latter being presented on behalf of the committee by Alphonse F. Brosky, bituminous editor of *Coal Age*. This will occupy the first session, opening at 10:30 a.m. The second session, at 1:30 p.m. of the same day, will hear papers, one by Graham Bright, chief general engineer of the Westinghouse Electric & Manufacturing Co., of Pittsburgh, Pa., on "Gathering Locomotives for Coal Mines;" another by C. D. Franks, district engineer of the Portland Cement Association, on "What Good Roads Mean to Mining Districts," and a third by J. M. Dowberry, general coal and coke agent of the Louisville & Nashville R.R., Louisville, Ky., on "Present Coal Traffic Problems and Prospects for the Future."

The same evening at 8 o'clock a smoker will be held at which the subject to be discussed will be: "How to Make an Operators' Association of Most Value." In this discussion the following are scheduled to discuss the problem: R. A. Hord, secretary, Hazard Coal Operators' Exchange, Lexington, Ky.; R. R. Clayton, secretary, Harlan County Coal Operators' Association, Harlan, Ky.; J. E. McCoy, secretary, Southern Appalachian Coal Operators' Association, Knoxville, Tenn.; J. E. Butler, general manager, Stearns Coal & Lumber Co., Stearns, Ky.; C. F. Richardson, president, West Kentucky Coal Co., Sturgis, Ky.; R. C. Tway, president, R. C. Tway Coal Co., Louisville, Ky.; Munro B. Lanier, president, Munro-Warrior Coal & Coke Co., Birmingham, Ala.; C. S. Nield, general manager, Pioneer Coal Co., Kettle Island, Bell County, Ky.; K. A. Mequire, president, the Harlan Coal Co., Louisville, Ky.; Harry E. Bullock, president, Carrs Fork Coal Co., Lexington, Ky.; Frank D. Rash, president, St. Bernard Mining Co., Earlington, Ky.; F. P. Wright, general manager, Crescent Coal Co., Bevier, Ky.; James D. Overall, general manager, Reinecke Coal Mining Co., Madisonville, Ky.; C. J. Norwood, University of Kentucky, Lexington, Ky.; R. Dawson Hall, Engineering Editor, *Coal Age*, New York City.

On Saturday a business session will be held at 9 p.m., after which the meeting will be adjourned.

Cliftonville Case Involves 218 Union Men 71 Charged with Murder

Two hundred and eighteen union miners were placed on trial at Wellsburg, county seat of Brooke County, W. Va., on Oct. 9, charged with complicity in the death of Sheriff H. H. Duvall, of Brooke County, who was killed while repelling an attack on the Cliftonville mine of the Richland Coal Co., on July 17. Seventy-one of the defendants are charged with first-degree murder. The indictments range from murder to conspiracy, burning of property and assault. As many as half a dozen indictments are pending against some of the defendants, all of whom, it has been announced, will be prosecuted to the full extent of the law.

Prosecuting Attorney W. S. Wilkins of Brooke County will be assisted by John J. Coniff and J. B. Handlan, of Wheeling. Charles J. Shuck resigned as Assistant District Attorney to engage in the case as counsel for the defendants, and has associated with him D. A. McKee, formerly prosecuting Attorney of Ohio County; F. A. O'Brien and M. J. Cullinan, all of Wheeling, and John D. Gardner, of Steubenville, who was once a miner. One of the most interesting phases of the case is that John J. Coniff, who was the principal attorney for the defendants in the Matewan case, will act as one of the principal attorneys for the state in the Cliftonville case.

Martial Law Lifted in Mingo County

Martial law, established in Mingo County, West Virgina, June 27, 1921, more than fifteen months ago, after a series of outbreaks, which resulted in several deaths and the destruction of considerable property, was raised Oct. 7 by Governor Morgan. Peace has been restored along the Tug River, where war between union and non-union miners spread terror and resulted in the intervention of federal troops.

Preliminary Statistics of Production of Coal in Indiana in 1921

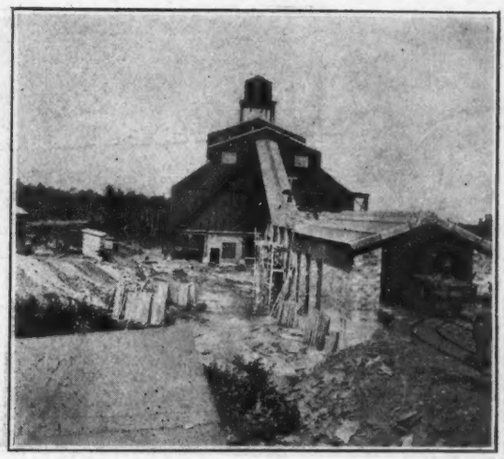
(Exclusive of product of wagon mines)

County	Loaded at Mines for Shipment (Net Tons)	Sold to Local Trade and used by Employees (Net Tons)	Used at Mines for Steam and Heat (Net Tons)	Made into Coke at Mines (Net Tons)	Total Quantity (Net Tons)	Total Value	Average Value per Ton	Number of Employees — Underground — Miners, Loaders etc. (a)	Number of Employees — Underground — All Others	Number of Employees — Surface	Number of Employees — Total	Average Days Worked
Clay	503,721	12,227	31,532	.....	547,480	$1,275,000	$2.33	685	317	382	1,384	84
Crawford and Dubois	.....	8,936	208	.....	9,144	26,000	2.84	10	3	3	16	222
Daviess	234,917	27,578	8,609	.....	271,104	614,000	2.26	284	103	50	437	140
Fountain and Warren	.....	2,527	.....	.....	2,527	8,000	3.16	11	.....	...	11	145
Gibson	607,824	32,984	17,319	.....	658,127	1,716,000	2.61	591	331	112	1,034	147
Greene	1,799,263	23,839	62,377	.....	1,885,479	4,632,000	2.46	1,828	764	475	3,067	109
Knox	2,624,994	42,445	68,672	.....	2,736,111	7,083,000	2.59	2,430	877	391	3,698	135
Owen	67,132	2,063	8,150	.....	77,345	206,000	2.66	12	.....	82	94	121
Parke	8,006	19,548	695	.....	28,249	76,000	2.69	85	43	17	145	71
Perry	.....	8,064	.....	.....	8,064	27,000	3.35	21	4	2	27	150
Pike	1,001,270	21,986	12,213	.....	1,035,469	2,858,000	2.76	1,069	468	270	1,807	102
Spencer	4,811	2,661	.....	.....	7,472	18,000	2.41	18	4	6	28	111
Sullivan	3,291,929	31,984	94,522	.....	3,418,435	8,480,000	2.48	2,973	1,560	584	5,117	135
Vanderberg	80,764	134,846	9,055	.....	224,665	604,000	2.69	297	79	28	404	185
Vermillion	2,055,566	40,199	90,121	.....	2,185,886	5,564,000	2.55	2,528	1,099	380	4,007	116
Vigo	6,027,304	163,339	173,602	.....	6,364,245	16,794,000	2.64	6,552	2,514	709	9,775	140
Warrick	808,758	35,394	15,555	.....	859,707	2,288,000	2.66	1,078	294	264	1,636	118
Totals	19,116,259	610,620	592,630	.....	20,319,509	$52,269,000	$2.57	20,472	8,460	3,755	32,687	128

(a) Includes also shotfirers. Statistics compiled by L. Mann, U. S. Geological Survey, Oct. 7, 1922.

New England in Fair Way To Escape Domestic Coal Shortage

Warm Weather, Cellar Stocks and Plenitude of Substitutes Reassure—Massachusetts Takes Steps to Safeguard Supply—Goodly Share of Anthracite Shipments Goes Down East



New England has made strenuous efforts to avert a domestic coal shortage before the advent of coal-burning weather. Despite all the warnings of an impending famine, there are several encouraging factors in the situation in that section which indicate that household consumers may "get by" with a minimum of inconvenience this winter.

Unseasonably warm weather has delayed the lighting of furnaces. This has proved a welcome respite to retail dealers and has enabled shippers to spread a thin veil of anthracite over the territory as a bulwark against the insistent demands which will come with the first cold snap. More coal went into cellars just prior to the anthracite suspension than has been generally realized. New England got a fair proportion, at least, of the mine storage stocks that were moved during April, May and June. Substitute fuel is plentiful; little has been distributed at retail, but it will be available when wanted. Lastly, economy in fuel consumption can always be expected during a period of shortage with its attendant high prices.

Conditions in Massachusetts are typical of New England as a whole. That state, through its Fuel Committee, is taking active steps to safeguard the fuel supply and protect its citizens from extortion. In urging upon the Federal Fuel Distributor, at Washington, the necessity for adequate supply and reasonable prices, James J. Phelan, Massachusetts Emergency Fuel Distributor, describes the situation in that state as follows:

UNLOADING BRITISH STEAMER AT MYSTIC WHARF, BOSTON

During fuel emergency New England railroads and industries have been heavy takers of British coal, straining unloading facilities and congesting our harbors with boats awaiting their turn at the wharves.

"Bituminous reserve stocks for industrial purposes are not in excess of the line of safety, considering our remoteness from the mines. Anthracite deliveries by dealers to householders so far this season, commencing April 1, are carefully estimated not to have exceeded 25 per cent of the total quantity customarily distributed by dealers to householders within the same period of time in normal years.

"In view of the fact that the people of New England and of Massachusetts have always used anthracite for their household needs, and we have this year lost five out of twelve months' anthracite production, it follows that our people will be unable to secure adequate anthracite supplies. We shall, therefore, be compelled to use considerable substitute fuel to take the place of, or mix with, such supplies as we may be able to secure.

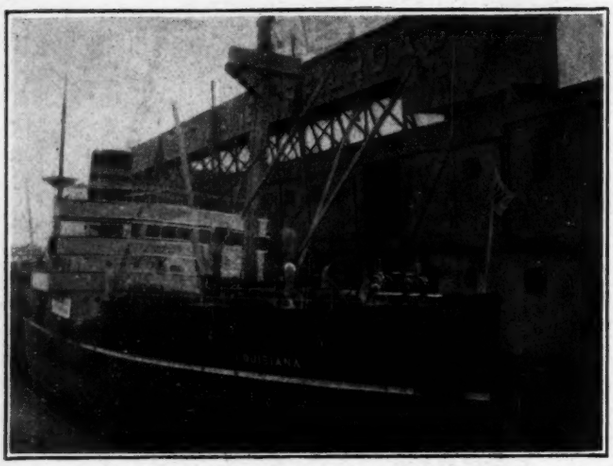
Would Not Hesitate to Issue Embargoes

"I am glad to observe that you are exerting every effort to secure the fullest transportation services in order to provide the maximum quantities available as promptly as possible. I, therefore, trust that you will not hesitate, whenever the occasion requires, to issue embargoes, and establish priorities that shall maintain constant and equitable distribution between states. In this connection may I point out that in my order of Sept. 21 'all dealers and consumers receiving fuel in carload lots must unload such cars within the twenty-four hours following the receipt thereof. Every day saved in the use of coal cars should be a gain of several tons in production.

"There exists to-day a variation of approximately $4 a net ton in the mine prices being charged Massachusetts retail dealers above the costs prevailing last March for anthracite, resulting in increased costs to our householders. I can, and shall, control the gross margin which may be added by dealers to the cost of coal to them, in order to prevent extortion within the state, but it is obvious that the cost of coal at its sources is beyond my control. You will understand that our earnestness in this matter is based upon our desire that the federal and state governments shall fully co-operate in such a way as will secure to the citizens of Massachusetts the best results possible under the present difficult conditions."

New England is getting more than its fair share of current anthracite shipments, when the meager Western and Lake movements are considered. Requirements for the winter in Massachusetts are estimated at 5,500,000 tons. By Oct. 1 all-rail shipments of anthracite to this section were averaging 300 cars per day. The normal movement is 425 cars. If this movement and shipments by water can be maintained the estimated shortage of 1,500,000 tons will be reduced materially. However, this shortage will occur for the most part at the beginning of the season, therefore the main problem is to overcome this difficulty for perhaps 60 or 90 days, after which it is expected that the conditions will gradually become normal before the winter has ended.

NOTE—The headpiece shows a Rhode Island "anthracite" mine near Providence.



BRITISH CARGO ON MYSTIC RIVER
S.S. Louisiana tied up at B. & M. R.R. Dock in Boston, awaiting unloading at Mystic Wharves.

Consumers are not buying our bituminous coal as a substitute for anthracite. The high freight rates make the cost prohibitive except as a last resort. The householder feels that this coal can be obtained in a pinch, but he will not buy it unless the pinch comes. A drive has been made on the domestic market by British sellers, in an endeavor to place some of their coal. Shippers offered "Welsh semi-anthracite" along the Eastern seaboard at prices that compared favorably with our own hard coal. Some few cargoes have moved in, but the amount distributed by retailers has been insignificant and little additional tonnage is now expected. New England railroads have been heavy takers of British commercial fuel. Many cargoes are in the harbors and others are still coming. This unusual flow of coal has been transported in a miscellaneous assortment of bottoms, many of them of a type that has caused delay at New England unloading machines. But despite much congestion the price has been kept at a level which still attracts the New England railroads, which are taking advantage of this opportunity to add to their reserves.

British Fuels, Though High Grade, Do Not Ship Well

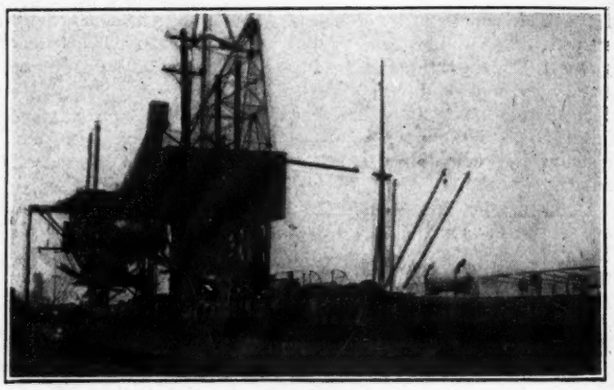
British shippers also made an attempt to push their Admiralty Large for domestic purposes, but, like the Welsh semi-anthracite, this coal has not cut much of a figure in the domestic market. Both are high-grade fuels, but do not ship well. The New Englander has been so accustomed to the use of our clean and uniformly sized anthracite that the physical appearance alone of the British coal has been against its sale at retail. The following analyses were made from recent receipts in New England:

AWAITING CARS TO TAKE BRITISH CARGO
Mystic Wharf, Boston, is the scene of great activity. Cars are filled as rapidly as they can be "spotted."

	Welsh Semi-Anthracite	Admiralty Large
Carbon	82.75	78.79
Volatile	11.45	14.09
Ash	3.95	5.38
Moisture	1.05	.77
Sulphur	.88	.97
B.t.u.	.....	14,810

Coke is finding a better market for domestic purposes than for years past. The present emergency also has produced a strong market for Rhode Island coal, which is being sold not only at points adjacent to the mines but is finding its way to more remote New England points. The public had lost much of its faith in this coal, partly because of its weight, which made it appear small in bulk when delivered, and partly because of its excessive ash content, but mainly because of the difficulty in kindling it. This coal is extremely variable in character and quality, ranging from anthracite to graphite and, unlike Pennsylvania anthracite, its high content of water necessitates a special drying process. During the last year or so extensive experiments have been made in preparing and firing this fuel, and at the present time one company at least is putting it on the market in sizes and condition that makes it an excellent substitute for Pennsylvania anthracite and at a price which is attractive. New methods of firing are necessary; the coal needs considerably more draft than other fuels, but once one becomes acquainted with its peculiarities it is said to be far more satisfactory as a domestic fuel than bituminous coal.

Anthracite receipts are making inroads on the shortage with every day's delay of cold weather. With the practice of economy and a plenitude of substitutes at hand when wanted, the worst that New England householders should experience this winter is the necessity of adapting themselves to the use of unfamiliar fuels. At that the substitute tonnage will not be large and its use will be confined to the early part of the season.



BOSTON & MAINE R.R. TAKES MUCH BRITISH COAL
Unloading cargo directly into railroad cars, shown in foreground.

The U. S. Bureau of Mines, in co-operation with the U. S. Public Health Service and the Society of Heating and Ventilating Engineers, is engaged in a study of the relative importance and correct correlation of the many individual factors concerned in the problem of the physiological effect of different conditions of temperature humidity and air motion. A special room has been constructed for this purpose at the Pittsburgh station in which the air conditions are controlled by apparatus outside the chamber and entirely separate from it. A comprehensive program, which includes a quantitative study of a considerable number of bodily functions, is being carried out. The work has not yet been completed, but enough has been done to demonstrate the importance of determining the physiological reaction to environment as a measurement of the harmful effect of heat and humidity, and to show that feelings of discomfort as a standard of measurement cannot be depended upon because there is a certain adaptation of the sense organs to an unchanging environment, and individuals differ in their sense reactions.

Smokeless Operators Will Sell Domestic Sizes at $6; Spens to Probe Anthracite Prices Over $9.25

Prepared sizes of smokeless coal for domestic use will not be sold at a price in excess of $6 a ton, an agreement to that effect having been reached by the Federal Fuel Distributor and operators representing 80 per cent of the smokeless production. Fuel Distributor Spens gave out the results of the conference in the following prepared statement:

"The Federal Fuel Distributor had a conference on Oct. 14 with coal operators in the 'smokeless field' of West Virginia relative to coal prices. This field comprises the Pocahontas district, the New River district, the Winding Gulf district and the Tug River district, and the estimated total coal production in these four districts is 36,000,000 tons per annum. The operators that were present at the conference represent approximately 80 per cent of the commercial production.

"The maximum price f.o.b. mines on prepared sizes for household use that was observed by the operators, through co-operation with federal and state authorities, prior to cessation of the miners' strike, and at a time when the car supply in the 'smokeless field' practically equalled the demand, was $5.13 per ton, including sales agency's commission. With the settlement of the miners' strike in union coal districts the operators in the 'smokeless field' found it necessary to advance the wages in their mines materially, resulting in an estimated increased cost of production of the prepared sizes of approximately $1 per ton. In addition, with the ending of the strike, the car supply commenced to diminish, due to distribution of equipment that naturally had resulted from a wider distribution of this 'non-union' coal, the immediate demand for cars from 'union' mines, and the retarded transportation incident to the railway strike, until today the car supply in the 'smokeless field' is appreciably below currrent requirements and quite below the supply available at the time the former price was established.

Smokeless Coal Now Much in Demand

"The demand for 'smokeless' coal is very great, and since the termination of the miners' strike, at which time this understanding as to prices was cancelled, f.o.b. prices at the mines on domestic coals have ranged as high as $8.75 per ton plus 8 per cent sales agency's commission, or a total of $9.45 per ton. These operators, however, in appreciation of the present emergency and in a desire to co-operate with the federal government in the accomplishment of its purposes, indicated a willingness not to exceed a maximum price f.o.b. mines of $6 per ton on the prepared sizes of coal for domestic use, this price also to include the sales agency's commission. Therefore, effective at once, this will be the maximum price f.o.b. mines that wholesalers, retailers or other purchasers of these coals will be asked to pay.

"While, as stated, the entire production of the 'smokeless field' was not represented at the conference, we have been assured that the action taken by the very large majority will undoubtedly be followed by the remaining interests."

Conferences on the matter of coal prices are being arranged by the Federal Fuel Distributor with representatives of mine operators from each of the sixteen coal-producing districts east of the Mississippi River. Fuel Distributor Spens is giving attention also to the price situation in certain coal-producing states where it is reported that coal is being sold within the state at a certain maximum figure agreed upon with the state authorities while it is being marketed outside the state at figures in excess of this maximum.

Lieutenant-Colonel C. B. Hatch, U. S. Marine Corps, retired, has been designated with the permission of the Navy Department to act as the representative of the Federal Fuel Distributor on the fair practices committee of Pennsylvania, an organization which functions as a part of the Pennsylvania Fuel Commission and which is giving its especial attention to matters affecting the price and distribution of anthracite. Lieutenant-Colonel Hatch's residence is in Philadelphia. He succeeds E. M. Durham, Jr., who is resuming his duties with the U. S. Railroad Administration. Arrangements have been made for a conference between the federal distributor and a special committee of the National Coal Association, of which J. C. Brydon, of Baltimore, is chairman, to be held in Washington, Oct. 18, for the purpose of discussing matters relating particularly to transportation conditions and car shortages.

The following statement summarizing developments in the anthracite price situation was issued Monday night by the Federal Fuel Distributor:

"Approximately 75 per cent of Pennsylvania's anthracite is produced by the larger, or so-called 'company' operators. The balance is produced by the so-called 'independent' operators. On the 75 per cent production a price of $8.50 per ton f.o.b. mines, established by Pennsylvania state authorities prior to the creation of this office, applies today as a maximum, although on a goodly percentage of this production prices ranging from $8 to $8.35 per ton have voluntarily been observed. On the remaining 25 per cent production prices range from $9.25 to as high as $14.25 per ton f.o.b. mines.

"The fair practices committee of Pennsylvania was appointed several weeks ago to investigate cost of the 'independent' production and to determine fair f.o.b. mine prices. The Federal Fuel Distributor is represented on this committee.

"This committee commenced to function about Oct. 1, and since that time, pending a more thorough investigation and final conclusions, 'independent' operators, representing approximately 20 per cent of the total production, have signified a willingness to observe a maximum price of $9.25 per ton f.o.b. mines, the prices theretofore on this production having ranged in some instances to as high as $10.50 per ton.

"In order that the fair practices committee may concentrate its efforts on the remaining approximately 5 per cent, on which production prices are today ranging as high in some cases as $14.50 per ton f.o.b. mines, the Pennsylvania Fuel Commission and the Federal Fuel Distributor have agreed as a temporary expedient to defer investigation of these independent operators whose prices will not exceed $9.25 per ton f.o.b. mines. The Fair Practices Committee have been advised by the Pennsylvania Fuel Commission and the Federal Fuel Distributor that their findings as to fair prices that should obtain for the 5 per cent production should be completed by not later than Oct. 31."

Jobbers' Commission, Neal Rules, Must Not Bring Coal Price Above Mine Maximum

Jobbers' and brokers' commission charges on sales of coal to retailers and consumers must not raise fuel prices above maximum levels fixed for coal at the mine by the state, under a ruling by C. J. Neal, state fuel administrator of Ohio and approved Oct. 11 by Governor Harry L. Davis. Under this ruling the "fair prices" of $3.56 to $4.86 established in Ohio include the middleman's profit. Mr. Neal's announcement reads:

"Effective Tuesday, Oct. 10, prices received by producers in Ohio for coal sold to jobbers, brokers or wholesalers for delivery within the state and the commission of such jobbers, brokers or wholesalers must not exceed the list of maximum fair prices announced Oct. 3 and effective Oct. 10 until changes are announced in such prices."

Argument in the assigned car case will be reopened before the Interstate Commerce Commission on Nov. 15. The docket in the matter of mine rating and coal-car distribution rules will be considered at the same time. Commissioner Aitchison will preside.

Maurer Foresees Repetition of This Year's Trouble Next April*

Until 1916 such a thing as a fear of a coal shortage in the Central Competitive Field had almost been unheard of. Back in 1898 the old interstate agreement was formed, and I want to say without any hesitation that it was a success and served its purpose. True, in ten years the price of mining doubled; true, in that ten years capital started to invest in West Virginia, and while our West Virginia friends may charge us with a great many evils, the interstate agreement in the Central Competitive Field and the wages we paid developed and built up West Virginia.

Capital went where capital controlled, and in the Central Competitive Field capital did not control. And as wages increased in Ohio and Pennsylvania, notwithstanding the fact that they were within twenty-four hours of the great markets, lower wages and control of labor gradually built up and developed the great State of West Virginia and brought those coals into the markets.

The greatest blessing that the people of West Virginia have today is the fact that we have had an interstate agreement and a high wage scale in the State of Ohio and the Central Competitive Field. In 1898 and from that date on until 1916 both labor and the employers had respect for that contract. It was the most binding contract that was made in this country, and both sides took pride in the fact that the contract was carried out. But the interstate agreement has served its purpose. Since 1916 there has never been a contract made with the United Mine Workers of America in the Central Competitive Field. What is the great underlying cause of all the legislation and all the interference and all the evils that we have?

There are but two: The United Mine Workers and railroad transportation.

The United Mine Workers have asked for government control. There isn't any easier way that they can get the government to step in and take control of your property than by creating situations like they have created in the last three years.

I believe in the right of property, I believe the right of property is just as sacred as a man's life, but nevertheless the advanced theory today is that the right of property is subject to the public welfare and the public good, and that is the conceded situation today and the situation which you and I must recognize in the operation of our properties.

By some custom there is a God-given right to strike that is recognized by the politicians, but I don't believe it is recognized by law. Instead of regulating the operator and the coal miner, in the name of common sense, why don't they regulate the strike and remove the cause?

I believe in uniform wages. There is no industry in the world that needs uniform wages more than the coal industry. With every man making his own wage at every mine, you sell your men, you don't sell your product, and I don't believe in that, but when you are working under a uniform scale of wages you have to sell your product and not your men.

My opinion is that the first of next April will be a repetition of last April. My opinion is that by the first of next April, those districts that regulate the price of their labor by the law of supply and demand will be able to meet market conditions by reducing their labor to meet the market conditions. You can't have Mr. Lewis shut down the mines in the Central Competitive Field on the first day of next April, or you will lose control of your properties. There is no middle course with the United Mine Workers. We, the operators, say that we won't deal with the national officials but we will deal with our state officials—that is non-union. Why, it was childish for the Pittsburgh district to make the statement on the first day of last April: "We are ready to deal with the United Mine Workers but we won't deal with the national officials."

In conclusion, there is just this I want to say: The great coal industry must recognize, irrespective of what some people think, that they have an obligation to the public; they must recognize that the public has some rights in their property and they cannot so operate them as to injure the general public. They cannot by strikes and suspension force situations by which there is a demand made for coal that will warrant a certain scale of wages, because it isn't fair to the public; and between now and the first day of April force the whole industry of the Central Competitive states to so shape itself that if it is unable to take care of its own affairs, it must get such assistance as will give it at least protection.

*Abstract of address of C. E. Maurer, president Glens Run Coal Co., before the American Mining Congress, Cleveland, Ohio, Oct. 12, 1922.

Bradley Defends Policies of Non-Union Operators*

During the long depression of 1921, when coal was a drug on the market, when the coal industry was ready for the hands of the universal receiver, the great Southern district was producing 80 per cent of its maximum.

That illustrates a very important point. There must have been a reason for that, and what was that reason? It was the ability to adapt itself to changing economic conditions. You travel through those fields and you will find enormous collieries, tremendous operations, wonderful mining towns, adapted to the comfort and the convenience of the employee such as you will find in no union field, where the bitterness and distress of class hostility has been injected, so that the operator doesn't feel like giving that man a decent place to live.

There in the South, where we have this co-operative spirit, you will find the cheapest living, the cheapest rents, the cheapest store prices; you will find co-operation in reducing wages and in raising them. We know when we should pay our men more and we do it. We are not tied up by a contract, running through every conceivable up and down of economic depression and keeping the men from getting a decent wage in good times, and taking the work away from them in bad times.

We only wish that you had the same advantages.

When I think about it I feel that I simply can't express to you what it means to the operator who is on that basis with his labor. It is a partnership, and that is what it ought to be. It is a man-to-man relationship. There is no third party to come between telling the thrifty workingman that he is being cheated; no third party to come in and tell the honest, hand-saving son of toil: "Don't work so hard."

Why is it necessary to have an investigating commission for the coal industry when the coal industry has been investigated by a public committee every eighteen months for the last seven years? Why can't they take some of that sworn testimony and give it to a man like George Otis Smith and have him compile it and tell the story, with the affidavits to back it up? It wouldn't be enough of a smoke screen.

Now, this is what we are getting out of Washington. This coal labor problem—I feel very much about my coal business as I do about my garden. I have been fighting bugs and insects and plant diseases in that garden from early spring until late fall every year since I can remember. My bill for insecticide is more than almost the pleasure that I get out of the garden. And that is just exactly what I have been doing with my coal business. I have been fighting the pests, the diseases, the assailants, and in West Virginia, by God, we fight them with a rifle, and so would you. You wouldn't let a sneaking skunk steal up and put a stick of dynamite under your house, would you; blow your wife and children to Kingdom Come ahead of you? I won't. I am for the gunman, the mine guard and every form of protection that I can get, as long as my government won't protect me! Let's have it out! That is what we are getting out of Washington.

Now we come to the crux of the labor problem. It is a question of the enforcement of the law that we have got. Labor courts, boards of conciliation—put them in the waste-

*Abstract of address of J. G. Bradley, president Buffalo Creek & Gauley Coal Co., Dundon, W. Va., before the American Mining Congress, Cleveland, Ohio, Oct. 12, 1922.

paper basket! Give the man who wants to work and who has the right to work the protection which he deserves—to work. There wasn't a time during this strike in the anthracite and bituminous coal industry that the mines could not have been manned by men who wanted to work, but they were afraid—afraid that they would be massacred, as they were at Herrin.

The public of the United States doesn't realize the crime that your union operators and the United Mine Workers have perpetrated on you. The public of the United States doesn't realize that the price of fuel for the future is today in the hands of the labor obligarchy, which has every intention of emulating Lenine and Trotzky; they are jealous because they haven't beaten them to it. And when you get the entire fuel resources of a nation in the control of such an unscrupulous, small group of men, you can sit around the table and say, "Now, John, you shouldn't do that," but it will get you nowhere.

Why should the public allow us to operate our mines if we haven't got the gumption to fight for our customers? They had better make their deal directly with the labor oligarchy; no use in counting us in. Why give us our profit? What have we done to earn it?

Before there is any other situation such as we have just come through, before another first of April, let us pray to God for the sake of the 110,000,000 people of the United States, who were held up by those controlling that 500,000—just as the highwayman in the night holds up the express crowded with people, so the leaders of this labor oligarchy have held up that 110,000,000—yes, let us see, that these high-paid public officials enforce the law; let us see that the public knows the situation so that they will demand that that law be enforced for their own protection.

Michigan Legislature Expected to Pass Fuel Bill Similar to New York's

Michigan's Legislature assembled in special session Oct. 10 to consider legislation to regulate distribution and cost of coal in the state and the Senate on Oct. 12 by a vote of 24 to 4 approved the measure submitted by the state's administrative officers, after slight amendments. One of the modifications limits application to coal and coke, releasing wood, oil and other forms of fuel, and another change eliminated authorization for appointment of a salaried fuel administrator.

The administration bill encountered rougher going in the House. It is predicted, however, that the House will pass the bill in modified form and that House and Senate will then harmonize the efforts of the two bodies.

The measure is modelled quite closely on the New York State law, though its provisions are said to be less drastic. It contemplates a system of licensing dealers and provides for seizure of coal or coke in possession of dealers.

ARGUMENT ON THE THREE SETS OF SUITS involving the validity of the Pennsylvania coal tax and valuation laws will be heard by the U. S. Supreme Court Nov. 13. Both sides urged that these test cases be expedited, so that if the decision of the Supreme Court be adverse to the state, the Legislature may have ample time to adjust its actions, regarding appropriations and otherwise, in accordance with the ruling. The principal fight is against the tonnage production tax and in this case several New England states are preparing to intervene on the ground that they have primary interest because the tax would increase the cost of coal to their consumers.

INDICATIONS NOW ARE that the distribution situation will have reached a sufficiently satisfactory state by Nov. 22 to allow Federal Fuel Distributor Spens to return to his regular position on that date, when his leave of absence expires. It is expected, however, that some machinery will have to be kept operative until the first of the year. Since much of the distribution work, however, would be of a routine character, there is nothing in the situation now to indicate that this cannot be handled by members of Mr. Spens' staff.

Spens Will Not Attempt to Fix Prices

The Federal Fuel Distributor has no intention of attempting price-fixing. This was brought out at a conference between John W. Davis, special counsel for the National Coal Association, and the law officer of the Fuel Distributor's office. Mr. Davis in a telegram to A. M. Ogle said: "Counsel for the Fuel Distributor assures me that the Fuel Distributor has no intention now or hereafter to attempt the fixing of prices. All efforts will be directed to moving coal.

©Harris & Ewing

JOHN W. DAVIS

Former Ambassador to Great Britain, as special counsel for the National Coal Association, expressed the opinion that the price-fixing features of the Cummins fuel distribution act are unconstitutional.

He intimates, however, that in cases of clear extortions cheapest coal will be given preference. He is willing to meet any suggestion as to form or contents of the daily reports and urges co-operation by operators lest matters be thrown into state legislatures for more drastic laws. Personally I am of the opinion that the price-fixing features of the Cummins Act are unconstitutional, although recent decisions of the Supreme Court, notably those on rent laws, have been on questions of a similar character. I do not advise legal action until the Fuel Distributor or the commission takes some oppressive step. Until then I think the general attitude should be co-operative."

Denies Ohio Coal Will Be Forced Into Markets Outside the State

Emphatic denial was made by Commander H. H. Bouson, federal representative in Ohio of the Federal Fuel Administration, to reports that Ohio-mined coal will be forced into interstate channels, thus compelling Ohio dealers to buy from other states at exorbitant rates, because of the Ohio emergency control system.

"Statements to the effect that Ohio's fair-price list would deprive the people of this state of coal are not founded on fact," Commander Bouson avers. "Definite instructions on that very point reached us recently. State Fuel Administrator Neal, on his recent visit to Washington, was assured that any effort to evade the Ohio law through interstate channels would meet with a sharp check from the federal authorities."

ON PAGE 601 OF *Coal Age* last week the Ohio fair-price schedule by districts contained an error in District 7, which should read as follows: "The counties of Trumbull, Portage, Summit, Mahoning, Medina, Wayne and Stark and the County of Columbiana except the townships of Washington and Yellow Creek, $4.86."

Coal Wholesalers Express Satisfaction With Personnel of Coal Commission

Wholesale coal dealers generally regard with satisfaction the personnel selected by the President to compose the United States Coal Commission and believe that considerable good will result from the fact-finding proceedings, according to Ira Cochrane, acting commissioner of the American Wholesale Coal Association.

Information received at the association's headquarters in Washington indicates that domestic demand, applied to bituminous coal only, is weaker than usual, which is attributed to late warm weather and to the expectation of many domestic consumers that prices will decline.

Transportation still is the limiting factor, as reported by the association, but Acting Commissioner Cochrane expresses the belief that the railroads as a whole have been perrforming remarkably well under the conditions with which they have had to contend.

Functioning of the Federal Fuel Administration thus far has been highly pleasing to the association of wholesalers, as the normal flow of coal traffic has been preserved without the confused haulings that some feared might result.

Rehearing of Coronado Case Denied

Rehearing of the Coronado coal case was denied by the U. S. Supreme Court in a ruling from the bench Oct. 9. Unless the original plaintiffs institute a new suit in the trial court, no other move is possible in the case.

In this case, a suit for damages against the United Mine Workers of America brought by the Coronado Coal Co. and others because of destruction of mine property in Arkansas during a strike, the Supreme Court on June 5, last, handed down a decision of far-reaching importance, holding that labor unions, although not incorporated, are suable and liable for damages which result from acts of their members on an authorized strike in matters affecting interstate commerce. The court held, however, that it could not sustain an award of damages in this case because it had not been established to the satisfaction of the court that the acts were in restraint of interstate commerce during an authorized strike.

In the petition for rehearing the original plaintiffs contended that interstate commerce was involved because the damage was inflicted to prevent competition with mines in other states with which the union had contracts. The petition further urged an award of judgment on the ground that the lapse of time since the damage was suffered would "inevitably embarrass the further prosecution of the cause."

Argument has been heard in the case of the Corona Coal Co. vs. the Southern Railway, involving assignment of cars to coal mines.

The case of the Hillsboro Coal Co. has been passed to be argued later.

Floating Coal Down the Ohio on Artificial Waves Leaves Many Barges Stranded

Government engineers have had considerable success at various times in creating artificial waves in the upper Ohio River to bring coal down from West Virginia mines toward Cincinnati, but a wave started Oct. 2 to bring down 50,000 tons of coal was a failure. The river is lower than at any time in fifteen years and when the pools of water above the various dams were released they spread out and moved so rapidly that the artificial stage didn't hold long enough to enable the tows to make much headway.

Out of ten fleets started all but one towboat got into trouble early and the Kanawha coal fleet is scattered at various points on the Ohio River, and will have to wait for a considerable rise before proceeding. In the meantime they may be iced in for the winter, as there have been seasons when there were no heavy rains or big river rises until after the first of the year.

One steamer lost two barges near Dam 28, when they hit bottom and sank. The steamer *Mitchell* went aground off Ironton, Ohio. The *Island Creek*—a towboat, which had been stranded on a bar below Maysville, Ky., for a week, managed to get off when the artificial wave reached her. She had a line of barges carrying between 5,000 and 6,000 tons, and at last reports was expected to reach Cincinnati. The *R. P. Gilliam* reported tied up at Lock No. 35, near Maysville, where she would hold her tow until a better stage of water is available. Handling a coal tow is no easy matter with a good river, but with shallow water and an artificial wave, creating a strong current, towing becomes a serious problem. However, previous efforts to bring out a lot of coal through artificial waves created by manipulation of locks and dams have been successful.

Railroads Consume 300,000 Tons Less of Coal During July Than in June

Class 1 railroads consumed 6,586,000 net tons of coal during July, 1922, as charged to account 394, compared with 6,892,000 tons in July last year, according to a report of the Bureau of Statistics of the Interstate Commerce Commission covering 182 steam roads. June consumption was 6,787,000 tons. For the first seven months of 1922 these roads consumed 51,661,000 tons as compared with 52,514,000 tons during the same period in 1921.

The delivered cost per ton in July was $4.32, or 33c. above that for July, 1921. The per-ton cost for the year to July 31, however, was only $3.67 as compared with $4.37 during the corresponding period of 1921.

Fuel-oil consumption continues to gain. During July 120,626,000 gallons were used, as compared with 114,911,000 gallons in July, 1921. The figures for the first seven months of 1922 and of 1921 were 831,923,000 and 811,719,000 gallons respectively.

End Strike at Connellsville Union Mines

Non-union mines in the Connellsville coke region are all gaining substantially in output and man-power and the car supply is improving. The Taylor Coal & Coke Co. at Searight resumed operations during the past week.

The strike at union mines along the Monongahela River has been settled. As reported last week, workers at the Diamond mine of the Diamond Coal & Coke Co. went out because they were asked to load Mather Colliery Co. (open-shop) cars, and the Lilly Coal & Coke Co. men quit because they were loading Pittsburgh Steel Co. barges. The Diamond miners stayed out only one day, but as a result of a meeting Sunday of several mines along the river the National Mining Co. mine, below Lilly, went out Oct. 9, and stayed out three days. They went back to work Oct. 12 and the men at Lilly went back the following day. The National Mining Co. is a union subsidiary of the United States Steel Corporation and the men quit rather than load Carnegie Steel Co. barges.

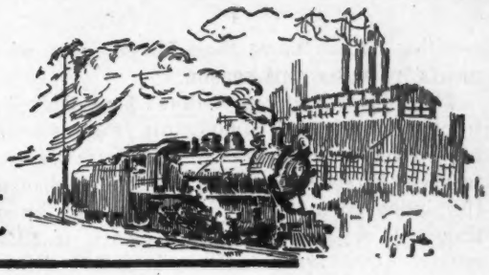
According to unofficial information there has been a steady return of men to work at the Leisenring No. 1 plant of the H. C. Frick Coke Co. during the last two weeks.

Restrictions on Bunker Coal Raised

An order raising the restrictions on bunker coal was issued Oct. 13. During the time that the restrictions were in force some 200,000 tons of coal which ordinarily would have gone to foreign ships has been diverted for American use. The accumulation of coal at ports and the rapid decline in prices at tidewater were regarded as sufficient indications that the regulation, which frequently imposed a severe hardship on shipping and on dealers and operators, could be cancelled.

THE NAVY DEPARTMENT has given permission to the City of Boston to use the coal unloading facilities at the Boston Navy Yard for coal consigned to the municipal coal yard. The plans for this municipal enterprise have been laid before the Federal Fuel Distributor and he has interposed no objection to the project.

Production and the Market



Weekly Review

Coal prices are still slipping downward and demand is but little improved, though signs are not lacking that the bottom will be reached before Nov. 1. Colder weather has strengthened the demand for domestic bituminous coal and this has been reflected in a better steam call. Industries normally go into the winter with increased stocks as a bulwark against poor receipts when transportation conditions are bad. This year has been the exception and buying has been on a hand-to-mouth basis. The prospect of still lower prices is now delaying purchases, but the recent touch of cold weather has shaken this resolve in a manner which indicates further buying action in the near future.

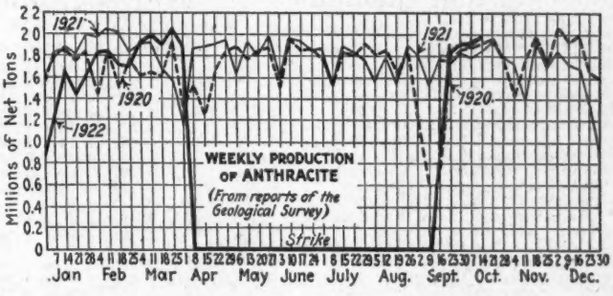
Demand has not yet revived sufficiently to hold prices. *Coal Age* Index of spot bituminous coal prices stood at 368 on Oct. 16 as compared with 380 a week earlier. This corresponds to an average mine price of $4.45, a drop of 15c. in the week. The previous week registered a decline of 29c. The trade expects the end of the price drop, which has been in progress since the middle of August, to await the advent of real cold weather, bringing with it deferred industrial and domestic demand.

Realizing Values, More Consumers Enter Market

Some large consumers have realized the good values now offering, and the past week has seen heavier takings by the railroads and utilities. The rank and file of buyers, however, have not yet appeared in the market, except for day-to-day requirements.

The market ranges from excessive dullness in New England to mild activity in the Chicago territory, which appears to be awakening to the fact that the time is short to obtain additional tonnage before the usual seasonal transportation difficulties appear. New York and other North Atlantic sections are experiencing better coal receipts via Tide and all-rail, offsetting the declining volume of British coal. Hampton Roads is in oversupply because of transportation congestion in the West, and coastwise factors are plying New England and North Atlantic centers with all the tonnage the market will stand, to the detriment of the all-rail fuels. Pittsburgh, Cleveland and Detroit are in more comfortable supply and inquiries are picking up with the recent cold spell.

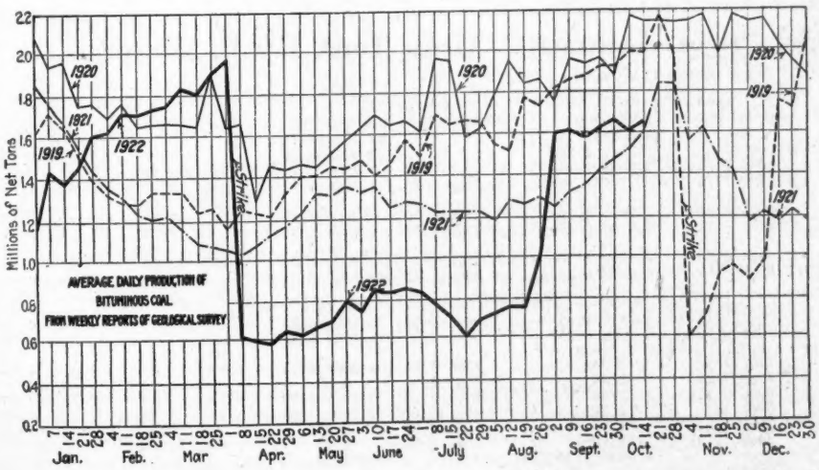
Much transportation progress has been made during the past week. It has been possible to move large amounts of coal which were being held on sidetracks and in yards between the mines and destination. This



accumulation has not been cleared up by any means but most of the railroads are beginning to make an impression on their accumulation of loaded cars.

Despite the large amount of coal still being held on railroad sidings, reports to Washington indicate that there are many cases throughout the country where coal is being sold for demurrage charges. Demands for priority have practically ceased.

Retail distribution of anthracite is progressing smoothly. Strict rationing of supplies has spread considerable tonnage over the East, but Western markets are obtaining little fuel. The Lakes have taken approximately 200,000 tons of hard coal since the strike ended, and it is not expected that the Northwest can



Estimates of Production

(Net Tons)

BITUMINOUS

Week Ended:	1921	1922
Sept. 23 (*b*)	8,527,000	9,747,000
Sept. 30 (*b*)	8,890,000	9,819,000
Oct. 7 (*a*)	9,134,000	9,706,000
Daily average	1,522,000	1,618,000
Calendar year	304,574,000	280,719,000
Daily av. cal. yr.	1,291,000	1,185,000

ANTHRACITE

Sept. 23 (*b*)	1,725,000	1,863,000
Sept. 30 (*b*)	1,802,000	1,947,000
Oct. 7 (*a*)	1,764,000	1,959,000
Calendar year	71,366,000	29,137,000

COKE

Sept. 30 (*b*)	79,000	160,000
Oct. 7 (*a*)	86,000	171,000
Calendar year	4,199,000	4,954,000

(*a*) Subject to revision. (*b*) Revised from last report.

possibly obtain more than 50 per cent of its requirements by water this season.

The approval of the Federal Fuel Distributor, acting jointly with the Pennsylvania Fuel Commission, has been given to the report of the Fair Practices Committee, which recommends that, in the case of a number of the independent operators who have announced that they will observe a maximum price of $9.25, the committee's investigative efforts be deferred for the present in order that its efforts can be concentrated on cases where prices in excess of $9.25 are being charged.

BITUMINOUS

"Complete returns on soft coal production for the week ended Oct. 14 will show about 9,900,000 tons," says the Geological Survey. "During the five weeks just closed the output has been at an almost uniform rate varying little from an average of about 9,780,000 tons.

"The number of cars loaded on Monday, Oct. 9, reported by the railroads, was 40,596, the largest reported this year; but on Tuesday loadings fell off to 29,239 cars, a figure exceeded on several Tuesdays since the close of the strike. The total cars loaded on the first four days of this week shows an increase of 3.9 per cent as compared with the same days of the week before. Full returns on loadings for the week are expected to show an output of 9,800,000 to 10,000,000 tons."

TIDEWATER SHIPMENTS FOR SEPTEMBER 1922
(In thousands of net tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	September Total	August Total
Coastwise to New England	125	28	48	736	..	937	761
Exports	...	...	...	56	8	64	62
Bunker	173	18	8	119	2	320	257
Inside capes	...	97	79	83	..	259	167
Other tonnage	317	...	...	309	18	644	573
Totals, September	615	143	135	1,303	28	2,224	....
Totals, August	264	50	53	1,439	14	.....	1,820

CUMULATIVE TIDEWATER SHIPMENTS, JANUARY TO SEPTEMBER 1919–1922
(Net Tons)

Destination	1919	1920	1921	1922
Coastwise to New England	6,351,000	7,979,000	6,055,000	8,247,000
Exports	6,061,000	15,375,000	8,942,000	1,357,000
Bunker	5,187,000	6,537,000	6,744,000	3,490,000
Inside capes	2,650,000	2,475,000	2,350,000	2,239,000
Other tonnage	7,945,000	6,606,000	5,421,000	5,880,000
Totals	28,194,000	38,954,000	29,512,000	21,213,000

Hampton Roads dumpings were 262,997 net tons during

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Sept. 18 1922	Oct. 2 1922	Oct. 9 1922	Oct. 16 1922†
Smokeless lump	Columbus	$6.25	$6.75	$6.75	**$6.50@$7.00**
Smokeless mine run	Columbus	5.75	5.75	5.75	**5.75@ 6.25**
Smokeless screenings	Columbus	5.50	5.75	5.60	*5.25@ 5.75*
Smokeless lump	Chicago	6.25	6.35	6.25	*5.00@ 7.00*
Smokeless mine run	Chicago	5.85	5.85	5.60	4.75@ 6.50
Smokeless lump	Cincinnati	6.50	6.30	6.30	**5.15@ 8.00**
Smokeless mine run	Cincinnati	5.50	5.70	5.95	4.90@ 7.00
Smokeless screenings	Cincinnati	5.50	5.30	5.80	4.60@ 7.00
*Smokeless mine run	Boston	8.05	8.05	7.25	*7.00@ 7.40*
Clearfield mine run	Boston	4.35	4.50	4.25	4.00@ 4.50
Cambria mine run	Boston	5.25	4.75	4.50	4.25@ 4.75
Somerset mine run	Boston	4.85	4.60	4.30	4.00@ 4.60
Pool 1 (Navy Standard)	New York	5.40	5.50	5.25	4.75@ 5.75
Pool 1 (Navy Standard)	Baltimore	5.50	5.75	5.50	*5.25@ 5.50*
Pool 9 (Super.Low Vol.)	New York	4.75	4.85	4.65	4.35@ 5.00
Pool 9 (Super.Low Vol.)	Philadelphia	5.60	4.60	4.35	4.00@ 4.75
Pool 9 (Super.Low Vol.)	Baltimore	5.10	5.10	4.85	*4.50@ 4.75*
Pool 10 (H.Gr.Low Vol)	New York	4.35	4.65	4.10	4.00@ 4.25
Pool 10 (H.Gr.Low Vol.)	Philadelphia	5.10	4.25	3.85	*3.50@ 3.75*
Pool 10 (H.Gr.Low Vol.)	Baltimore	4.85	4.75	4.25	**4.25@ 4.50**
Pool 11 (Low Vol.)	New York	4.10	3.85	3.60	*3.25@ 3.75*
Pool 11 (Low Vol.)	Philadelphia	4.85	4.00	3.35	*3.00@ 3.50*
Pool 11 (Low Vol.)	Baltimore	4.35	4.25	4.05	**4.00@ 4.25**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	4.35	4.15	4.05	*3.75@ 4.00*
Pool 54-64 (Gas and St.)	Philadelphia	4.60	4.25	4.00	*3.50@ 4.00*
Pool 54-64 (Gas and St.)	Baltimore	4.60	4.15	4.05	4.00@ 4.10
Pittsburgh sc'd. (Gas)	Pittsburgh	.....	5.40	5.40	*5.00@ 5.50*
Pittsburgh mine run (St.)	Pittsburgh	4.65	4.25	3.60	3.50@ 3.75
Pittsburgh slack (Gas)	Pittsburgh	....	4.00	4.00	*3.75@ 4.00*
Kanawha lump	Columbus	5.75	6.75	6.50	*6.00@ 6.50*
Kanawha mine run	Columbus	5.50	5.90	4.60	*4.25@ 4.75*
Kanawha screenings	Columbus	5.30	5.90	4.50	*3.50@ 3.75*
W. Va. lump	Cincinnati	6.85	6.25	6.50	*6.00@ 6.50*
W. Va. Gas mine run	Cincinnati	.....	.....	.....	4.50@ 4.75
W. Va. Steam mine run	Cincinnati	....	....	....	3.50@ 4.00
W. Va. screenings	Cincinnati	5.25	4.75	4.10	*3.50@ 4.50*
Hocking lump	Columbus	5.75	6.25	5.25	**5.25@ 5.65**
Hocking mine run	Columbus	5.10	4.90	3.50	3.25@ 3.75
Hocking screenings	Columbus	5.25	4.50	3.50	*3.00@ 3.50*
Pitts. No. 8 lump	Cleveland	4.85	4.85	4.85	*3.81*
Pitts. No. 8 mine run	Cleveland	$4.60	$4.40	$4.40	*$3.56*
Pitts. No. 8 screenings	Cleveland	4.60	4.10	4.05	*3.31*
Midwest					
Franklin, Ill. lump	Chicago	5.40	5.40	5.40	5.25@ 5.50
Franklin, Ill. mine run	Chicago	4.75	4.75	4.50	4.25@ 4.75
Franklin, Ill. screenings	Chicago	4.45	3.85	3.25	3.00@ 3.50
Central, Ill. lump	Chicago	5.10	5.10	5.10	5.00@ 5.25
Central, Ill. mine run	Chicago	4.55	4.55	3.60	3.25@ 4.00
Central, Ill. screenings	Chicago	3.60	3.35	2.80	*2.00@ 2.75*
Ind. 4th Vein lump	Chicago	5.25	5.25	5.10	5.00@ 5.25
Ind. 4th Vein mine run	Chicago	4.85	4.85	4.60	4.50@ 4.75
Ind. 4th Vein screenings	Chicago	4.60	3.85	3.80	*3.00@ 3.50*
Ind. 5th Vein lump	Chicago	5.10	5.10	5.10	5.00@ 5.25
Ind. 5th Vein mine run	Chicago	4.65	4.65	4.35	*3.50@ 4.00*
Ind. 5th Vein screenings	Chicago	4.40	3.60	3.35	*2.75@ 3.00*
Standard lump	St. Louis	4.75	4.75	4.25	3.50@ 5.00
Standard mine run	St. Louis	3.90	3.75	3.35	3.25@ 3.50
Standard screenings	St. Louis	2.85	2.35	2.10	2.00@ 2.25
West Ky. lump	Louisville	4.75	5.50	5.25	*4.85@ 5.25*
West Ky. mine run	Louisville	4.25	3.85	3.60	*2.75@ 3.25*
West Ky. screenings	Louisville	4.00	3.55	3.25	*2.75@ 3.00*
West Ky. lump	Chicago	4.25	4.25	4.50	*4.00@ 4.25*
West Ky. mine run	Chicago	4.25	4.25	4.10	*3.50*
South and Southwest					
Big Seam lump	Birmingham	3.45	3.75	3.45	**3.45@ 4.00**
Big Seam mine run	Birmingham	2.60	2.75	2.60	**2.50@ 3.00**
Big Seam (washed)	Birmingham	3.10	3.35	3.10	**3.00@ 3.50**
S. E. Ky. lump	Chicago	4.25	6.25	6.25	5.00@ 7.50
S. E. Ky. mine run	Chicago	4.25	4.75	4.75	4.50@ 5.00
S. E. Ky. lump	Louisville	6.65	7.00	7.00	*6.50@ 7.00*
S. E. Ky. mine run	Louisville	5.65	5.35	4.75	*3.75@ 5.00*
S. E. Ky. screenings	Louisville	5.50	5.10	4.10	4.00@ 4.25
S. E. Ky. lump	Cincinnati	6.85	6.50	6.50	**6.00@ 7.50**
S. E. Ky. mine run	Cincinnati	5.35	5.10	4.75	*3.50@ 4.75*
S. E. Ky. screenings	Cincinnati	5.25	5.00	4.00	3.50@ 4.50
Kansas lump	Kansas City	6.25	.....	5.50	**5.50@ 6.00**
Kansas mine run	Kansas City	5.00	.....	4.25	4.25
Kansas screenings	Kansas City	2.60	.....	2.60	*2.50*

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

INCLUDES PENNSYLVANIA STATE TAX

	Market Quoted	Freight Rates	Latest Independent	Pre-Strike Company	Oct, 9, 1922 Independent	Oct, 9, 1922 Company	Oct. 16, 1922† Independent	Oct. 16, 1922† Company
Broken	New York	$2.34	.....	$7.60@$7.75	.....	$7.75@$8.15	.....	$7.75@$8.15
Broken	Philadelphia	2.39	$7.00@$7.50	7.75@ 7.85	.....	7.90@ 8.10	.....	7.90@ 8.10
Egg	New York	2.34	7.60@ 7.75	7.60@ 7.75	$9.25@10.50	7.75@ 8.25	**$9.25@$12.00**	**7.75@ 8.35**
Egg	Philadelphia	2.39	7.25@ 7.75	7.75	9.25@ 9.75	8.10@ 8.35	9.25@ 9.75	8.10@ 8.35
Egg	Chicago	5.09	.....	.....	.....	.....	10.00@ 12.00*	.....
Stove	New York	2.34	7.90@ 8.20	7.90@ 8.10	9.25@10.50	8.00@ 8.35	**9.25@ 12.00**	8.00@ 8.35
Stove	Philadelphia	2.39	7.85@ 8.15	8.05@ 8.25	9.25@ 9.75	8.15@ 8.35	9.25@ 9.75	8.15@ 8.35
Stove	Chicago	5.09	.....	.....	.....	.....	10.00@ 12.00*	.....
Chestnut	New York	2.34	7.90@ 8.20	7.90@ 8.10	9.25@10.50	8.00@ 8.35	**9.25@ 12.00**	8.00@ 8.35
Chestnut	Philadelphia	2.39	7.85@ 8.15	8.05@ 8.25	9.25@ 9.75	8.15@ 8.35	9.25@ 9.75	8.15@ 8.35
Chestnut	Chicago	5.09	.....	.....	.....	.....	10.00@ 12.00*	.....
Range	New York	2.34	.....	.....	.....	8.15	.....	8.15
Pea	New York	2.22	5.00@ 5.75	5.75@ 6.45	7.00@ 9.00	6.15@ 6.20	*6.55@ 8.00*	6.15@ 6.20
Pea	Philadelphia	2.14	5.50@ 6.00	6.15@ 6.25	7.00@ 7.25	6.15@ 6.20	7.00@ 7.25	6.15@ 6.20
Pea	Chicago	5.09	.....	.....	.....	.....	8.50@ 9.50*	.....
Buckwheat No. 1	New York	2.22	2.75@ 3.50	3.50	3.25@ 4.00	4.00@ 4.25	*3.00@ 4.00*	4.00@ 4.25
Buckwheat No. 1	Philadelphia	2.14	2.75@ 3.25	3.50	3.75@ 4.00	4.00	*3.50@ 4.00*	4.00
Rice	New York	2.22	2.00@ 2.50	2.50	2.25@ 3.00	2.75@ 3.00	*2.00@ 3.00*	2.75@ 3.00
Rice	Philadelphia	2.14	2.00@ 2.50	2.50	2.50@ 3.00	2.75@ 3.00	2.50@ 3.00	2.75@ 3.00
Barley	New York	2.22	1.50@ 1.85	1.50	1.50@ 2.00	2.00	*1.00@ 2.00*	2.00
Barley	Philadelphia	2.14	1.50@ 1.75	1.50	1.75@ 2.00	2.00	*1.25@ 2.00*	2.00
Birdseye	New York	2.22	.....	2.00@ 2.50	.....	2.75	....	*2.25*

*Net tons, f.o.b. mines. † Advances over previous week shown in **heavy type**, declines in *italics*.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 Inclusive	Sept. 5 to Sept. 30, 1922 Inclusive	Week Ended Sept. 30
U. S. Total	45.6	55.7	....	....
Alabama	63.5	64.6	61.3	82.4
Somerset County	55.5	74.9	36.2	37.7
Panhandle, W. Va.	55.3	51.3	63.3	55.7
Westmoreland	54.9	58.8	80.5	55.9
Virginia	54.8	59.9	55.6	66.6
Harlan	53.3	54.8	19.2	22.6
Hasard	51.7	58.4	13.7	17.0
Pocahontas	49.8	60.0	34.8	34.6
Tug River	48.1	63.7	34.4	22.7
Logan	47.6	61.1	25.2	22.3
Cumberland-Piedmont	46.6	50.6	32.0	28.9
Winding Gulf	45.7	64.3	30.9	27.0
Kenova-Thacker	38.2	54.3	43.8	46.7
N. E. Kentucky	32.9	47.7	25.6	23.7
New River	24.3	37.9	30.5	26.9
Oklahoma	63.9	59.6	60.7	69.9
Iowa	57.4	78.4	84.1	80.2
Ohio, Eastern	52.6	46.6	48.9	41.2
Missouri	50.7	66.8	64.8	54.5
Illinois	44.8	54.5	49.2	48.3
Kansas	42.0	54.9	66.3	52.8
Indiana	41.4	53.8	47.3	49.7
Pittsburgh†	41.2	39.8	54.3	52.0
Central Pennsylvania	39.1	50.2	66.9	52.5
Fairmont	35.3	44.0	47.0	61.3
Western Kentucky	32.5	37.7	29.8	24.9
Pittsburgh*	30.4	31.9	67.3	55.5
Kanawha	26.0	13.0	12.2	13.3
Ohio, southern	22.9	24.3	41.9	42.0

* Rail and river mines combined.
† Rail mines.

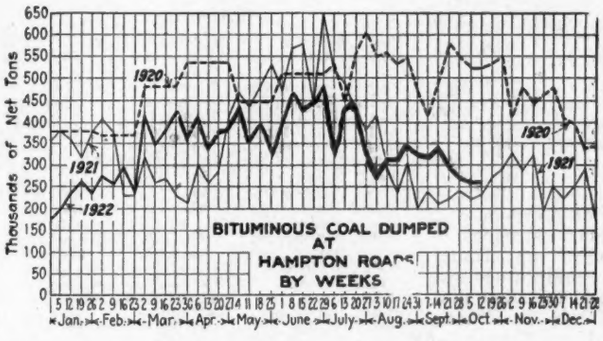
Car Loadings, Surplusages and Shortages

	Cars loaded All Cars	Cars loaded Coal Cars
Week ended Sept. 30, 1922	988,381	189,349
Previous week	973,291	187,896
Same week a year ago	904,831	180,354

	Surplus Cars All Cars	Surplus Cars Coal Cars	Car Shortage	
Sept. 30, 1922	5,843	3,486	130,325	32,148
Sept. 23, 1922	11,292	6,975	107,666	25,332
ame date a year ago	172,420	98,048	.....	.....

the week ended Oct. 12, practically unchanged from the preceding week. Coastwise markets—the bulwark of the Roads shippers—are in much softer condition and prices are being shaded to close sales. New England especially is in such comfortable supply that it is difficult to see where any considerable inquiry can develop before Jan. 1.

Lake dumpings were 1,053,873 net tons during the week ended Oct. 16, as compared with 1,179,298 tons in the preceding week. The season's Lake movement to date is 12,422,474 tons; last year it was 20,282,948 tons.

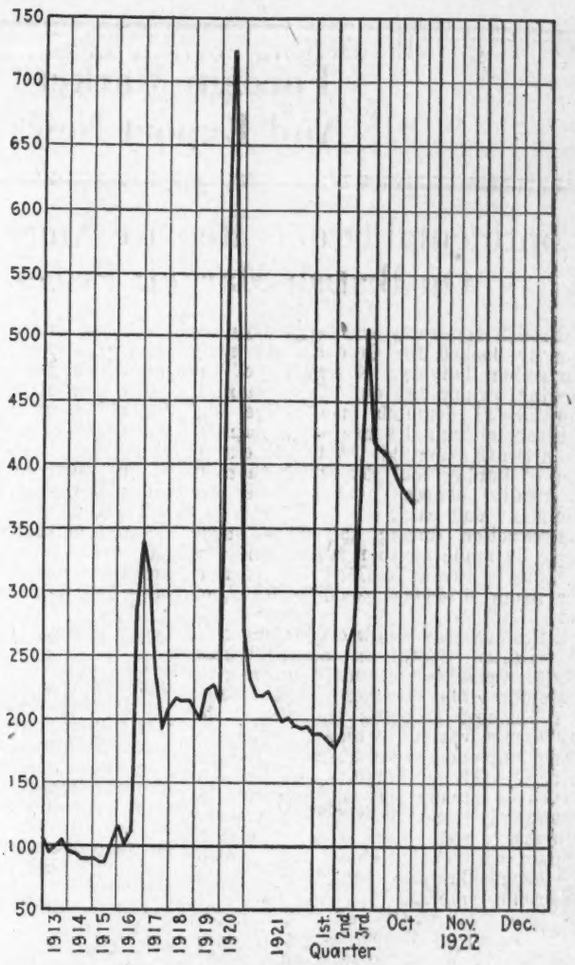

Thousands of Net Tons
1920
1921
1922
BITUMINOUS COAL DUMPED AT HAMPTON ROADS BY WEEKS
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.

ANTHRACITE

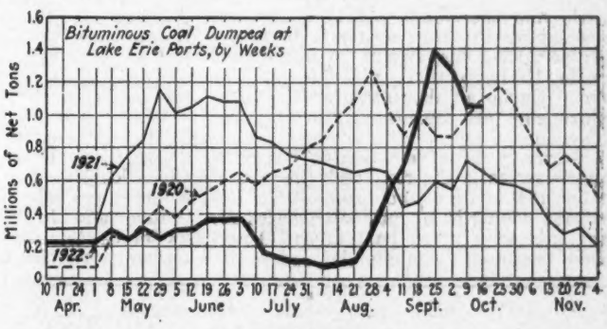
Production of anthracite continues to increase. The output during the week ended Oct. 7 was 1,959,000 net tons and loadings for the first four days of last week indicate an output of about 2,000,000 tons in that period. Much inconvenience is being caused by the slowness in the movement of steam sizes. There are now more than 150,000 tons of these coals between the mines and Eastern cities.

COKE

Production of beehive coke continues to increase slowly. The output during the week ended Oct. 7 was 171,000 net tons, 11,000 in excess of the preceding week. Coke prices are at last breaking, but the supply is still too costly and limited to tempt additional blast furnaces to resume.



Coal Age Index 368, Week of Oct. 16, 1922. Average spot price for same period, $4.45. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.



ESTIMATED MONTHLY CONSUMPTION OF COAL FOR MANUFACTURE OF COKE

(Net tons)

	Consumed in Byproduct Ovens	Consumed in Beehive Ovens	Total Coal Consumed
1917 Monthly average	2,625,000	4,354,000	6,979,000
1918 Monthly average	3,072,000	4,014,000	7,086,000
1919 Monthly average	2,988,000	2,478,000	5,466,000
1920 Monthly average	3,684,000	2,665,000	6,349,000
1921 Monthly average	2,401,000(b)	731,000(a)	3,132,000
June, 1922	3,707,000(a)	722,000(a)	4,429,000
July, 1922	3,571,000(a)	710,000(a)	4,281,000
Aug., 1922	2,577,000(a)	850,000(a)	3,427,000
Sept., 1922	3,223,000(a)	956,000(a)	4,179,000

(a) Assuming a yield in merchantable coke of 69.6 per cent of the coal charged in byproduct ovens, and 63.4 per cent in beehive ovens. (b) Revised from last report.

Foreign Market And Export News

Continental Orders Replace American Business On British Market; Prices Strong

British admiralty and large drys are heavily booked for October and early November delivery. A number of the leading owners are out of the market. Continental demands are active and substantial inquiries are being received from South America. With the exception of bunker coal, for which there is a steady demand, other sizes are abundant and easy.

Production during the week ended Sept. 30 made another slight gain, according to a cable to *Coal Age*, advancing from 5,144,000 tons to 5,177,000 tons.

Little business is now being done with the United States in South Wales, though Canada continues to be a good customer. The class of coal in which this business is being done is of the dry steam variety, which is evidently being employed as a substitute for anthracite. These Canadian orders have served to steady the market, and the downward trend of prices in Wales appears to have been arrested. In one or two cases prices have been cut to encourage the Continental and South American buyers.

In one week at the end of September a falling off of 45,400 tons was registered at the Welsh ports, chiefly owing to the slacker American demand. The European shipments also were lower, while the Admiralty orders were more than doubled.

The Yorkshire field continues to be steadily occupied. The pits are now able to sell all the best steam coal they can produce and prices are steady. The industrial demand is strengthening a little and the public utility companies are laying in large stocks. Operators are accepting easy prices for unscreened sorts to keep their pits clear. The chief European destinations for Yorkshire coal are Germany, Norway, and Sweden.

Germany is a very active buyer in the Newcastle district, and the orders from this source and from other European countries about compensates for the loss of a great part of the American business. Among the orders received in this area are one of 180,000 tons of steam coal over the next six months for the German State Railways, 5,000 tons of best Durham steam coal for shipment during October for the Norwegian State Railways, 2,000 tons of special Wear gas coals for Randers at 30s. 5½d., and smaller orders from other European railway companies.

There is very little change in the Scottish market. One or two shipments have been made to America and Canada, and there remains a small order to fill here and there in this direction.

French Fear Domestic Coal Shortage

Coal of the Nord and Pas-de-Calais has become more active still and domestic demand is especially pressing. A few collieries are restricting their shipments in provision for a strike which may break out before Nov. 1. A shortage of domestic coal is apprehended as soon as winter sets in.

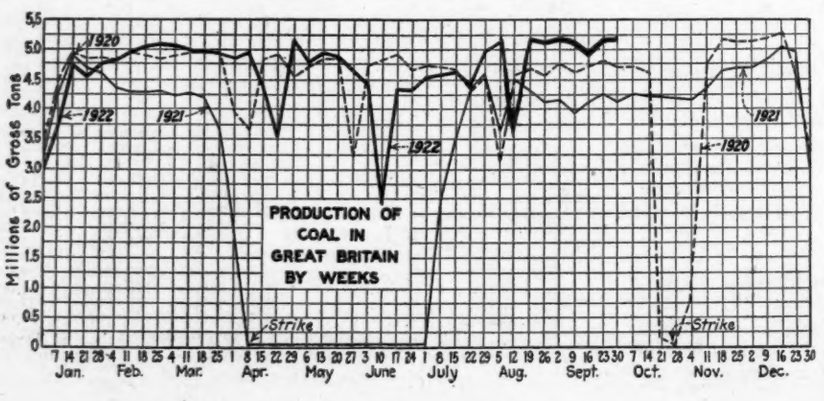
The outcome of the present conflict between operators and men may be determined when the French Parliament reassembles. Should, however, collieries of the Nord and Pas-de-Calais obtain no relief from their present cost price they will again be in none too enviable a situation as soon as British competition reasserts itself.

Mines of the Nord and Pas-de-Calais have published their official schedule of prices for the fourth quarter, which is the same as for the third quarter, less summer bounties which are now off.

FRENCH MINE PRICES

Slack	40fr.@ 58fr.
Screened	87fr.@107fr.
Run of mine, 20-25%	63fr.@ 66fr.
Run of mine, 30-35%	67fr.@ 71fr.
Smithy, pea	105 fr.
Washed pea	70fr.@ 92fr.
Washed small	57fr.@ 74fr.
Washed cobble	105 fr.

The adjusted price of German coke delivered to French blast furnaces by the Société des Cokes de Hauts-Fourneaux has been maintained for October and November at the same limit as for September—95fr. at the Franco-German frontier. On the other hand, French collieries of the Nord and Pas-de-Calais have reduced the price of the metallurgical coke they supply to the said Societe, in view of its being pooled with German coke, to 92fr. for November from a previous limit of 95fr.



Hampton Roads Pier Situation

	Week Ended Oct. 5	Week Ended Oct. 12
N. & W. Piers, Lamberts Point:		
Cars on hand	1,397	1,460
Tons on hand	85,763	98,631
Tons dumped	121,923	91,821
Tonnage waiting		12,650
Virginia Ry. Piers, Sewalls Point:		
Cars on hand	1,301	954
Tons on hand	81,100	57,450
Tons dumped	53,647	101,756
Tonnage waiting	9,923	9,500
C. & O. Piers, Newport News:		
Cars on hand	614	772
Tons on hand	30,700	38,600
Tons dumped	59,202	41,242
Tonnage waiting	1,550	1,600

Coal Paragraphs from Foreign Lands

BELGIUM—Activity in the coal market is still great in both industrial and domestic descriptions. Large orders have been received from Paris, Switzerland and Holland.

SPAIN—Since the end of the strike in the Asturias, Barcelona has received over 50,000 tons of that coal, but demand continues strong. A good number of industries are studying the use of Asturian coal in place of British owing to the rise in price of the latter.

The following are among the latest mine quotations of the Central Hullera Asturiana: Screened and lump, 50@52 pesetas, small gas, 35, small steam, 33, metallurgical coke, 60@67, blast furnace coke, 38@40.

Pier and Bunker Prices, Gross Tons

PIERS

	Oct. 7	Oct. 14†
Pool 9, New York	$8.00@$8.25	*$8.00@$8.15*
Pool 10, New York	7.50@ 7.75	7.50@ 7.75
Pool 11, New York	7.25@ 7.50	*7.00@ 7.25*
Pool 10, Philadelphia	7.25@ 7.75	7.25@ 7.75
Pool 11, Philadelphia	7.00@ 7.50	7.00@ 7.50
Pool 1, Hamp. Roads	7.00@ 7.50	*7.00@ 7.40*
Pools 5-6-7 Hamp.Rds.	7.00@ 7.50	*7.00@ 7.40*
Pool 2, Hamp. Rds.	7.00@ 7.50	*7.00@ 7.40*

BUNKERS

Pool 9, New York	$8.30@$8.55	$8.30@$8.50
Pool 10, New York	7.80@ 8.05	**7.85@ 8.10**
Pool 11, New York	7.55@ 7.85	*7.35@ 7.55*
Pool 10, Philadelphia	7.50@ 8.00	7.50@ 8.00
Pool 11, Philadelphia	7.75@ 8.25	7.75@ 8.25
Pool 1, Hamp. Rds.	7.60@ 7.65	*7.15@ 7.50*
Pool 2, Hamp. Rds.	7.60@ 7.65	*7.15@ 7.50*
Welsh, Gibraltar	40s. f.o.b.	40s. f.o.b.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	50s. f.o.b.	50s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	42s. t.i.b.
Welsh, Algiers	41s. 6d. f.o.b.	41s. 6d. f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	65s. f.o.b.
Welsh, Madeira	45s. 6d. f.a.s.	45s. 6d. f.a.s.
Welsh, Teneriffe	43s. 6d. f.a.s.	43s. 6d. f.a.s.
Welsh, Malta	42s. 6d. f.o.b.	42s. 6d. f.o.b.
Welsh, Las Palmas	43s.6d.f.a.s.	43s.6d.f.a.s.
Welsh, Naples	42s. f.o.b.	42s. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	52s. t.i.b.	52s. t.i.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Welsh, St. Michaels	50s. t.i.b.	50s. t.i.b.
Welsh, Alexandria	40s. f.o.b.	40s. f.o.b.
Welsh, Port Said	51s. 6d. f.o.b.	51s. 6d. f.o.b.
Welsh, Oran	40s. f.o.b.	40s. f.o.b.
Welsh, Fayal	50s. t.i.b.	50s. t.i.b.
Welsh, Dakar	46s. 6d. f.o.b.	46s. 6d. f.o.b.
Welsh, St. Vincent	46s. f.a.s.	46s. f.a.s.
Welsh, Montevideo	50s. f.o.b.	50s. f.o.b.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	Oct. 7	Oct. 14†
Admiralty, large	27s.@28s.	**27s.6d.@28s.**
Steam, smalls	16s.@16s.6d.	16s.@16s.6d.
Newcastle:		
Best steams	25s.@26s.	**25s.6d.@27s.**
Best gas	23s.@23s.6d.	**23s.6d.@24s.**
Best bunkers	22s.6d.@23s.	**22s6d@23s6d.**

†Advances over previous week shown in **heavy type**; declines in *italics*.

North Atlantic

Cooler Weather Fails to Stimulate Coal Market

Prices Firm Only on Good Grades—With Car Shortage Acute, Shippers Confine Efforts to Regular Trade—British Coal No Longer a Market Factor.

Colder weather has failed to cause much stir in the coal market. Only good grades are salable at firm prices, while the poorer qualities are forced to sell at lower figures. Shippers are not active in soliciting orders, as they are barely able to take care of their regular trade, so acute has the car shortage become.

Some large consumers have realized the good values now offering and are taking in a limited tonnage for storage, but the average buyer is still restricting his orders to current requirements. British coal has ceased to be a market factor, but this has been replaced by heavier American receipts, both by Tide and all rail.

PHILADELPHIA

No improvement is noticeable in the bituminous trade, the consumer holding off as usual, while the producer is not soliciting trade, being busy distributing tonnage to his regular trade. Car shortage is still a very serious problem.

Quite some complaint is heard of poor quality coal coming into the market, but this usually springs up when coal of the better grades is not to be freely had. With the consumer's attitude of waiting for lower prices, he is at the same time inclined to become more critical as to quality. The railroads now seem to be accumulating better stocks of engine fuel and are reported to have close to a month's supply ahead, or in prospect.

Prices are still inclined to weaken. Nothing seems to shake the consumers' confidence in much lower prices and they congratulate themselves that they are slowly achieving this result. Contrasted to this attitude we know of some large consumers who have contracted for blocks of tonnage of the best coal at prices that closely approximate the present spot market.

At Tide there is only ordinary business in bunkering, and only a minimum of shipments for export. British coal also seems to have ceased to be a factor in the market.

CENTRAL PENNSYLVANIA

Car shortage is about the only thing interfering with production. On the lines entering the central region and in the region reached over the New York Central, the supply of cars is only 30 per cent of requirements.

The miners are working in full force throughout the union areas. The non-union mines are rapidly gaining in car loadings and to all intents and purposes the strike in the non-union operations is over. The Berwind-White Coal Co., at Windber, where the battle was most bitterly contested, is making daily gains in production.

Prices quoted at the mines are: Pool 10, $4.25@$4.50; Pool 9, $4.50@$4.75; Pool 1, $4.75@$5. Lower grades are quoted at $4.

BALTIMORE

Now that winter is approaching rapidly the seasonal jump in demand for storage in anticipation of traffic congestion to come later might well be expected. So far this has failed to materialize and even the larger industries are going ahead without much reserve.

The easy market has had the tendency of preventing any further jumps in price and in some cases there has been a recession, this being especially true of gas coals. With the call for soft coal coming from sources that normally use only anthracite there is noted a particularly strong demand for lump but there has been so little screening done that dealers are at a loss to know where to get the lump for this trade as they recommend.

The situation has strengthened the call for English coals, even though they are selling much above the American lump. Following the importation of 88,789 tons of British coal at Baltimore from the latter part of August till Oct. 15, it is reported that other ships will shortly arrive. The October arrivals were two with a total of 13,586 tons. The first export movement noted since last April came on Oct. 9 when a schooner sailed for Cuba with 2,434 tons. The last previous export movement was on April 10, when 2,916 tons cleared for Cuba.

NEW YORK

No buying to amount to anything has come into the market and prices show little tendency to advance. At the same time the decline seems to have been checked, in the better grades of coal at least. There has been no improvement in the situation. If anything, it is worse.

With such a state of affairs prevailing when the railroads have nothing to contend with in the way of adverse weather conditions, it is easy to surmise what will happen when low temperatures make their appearance. Yet the average consumer is making no effort to get stocked up against such a time. The hope of getting coal cheaper by waiting is the actuating motive in nine cases out of ten.

Few of the operators are willing to commit themselves over a period of months at the prices now prevailing in the spot market. They are fully as confident as the buyers when it comes to predicting the future course of prices, the only difference of opinion being as to which way the cat is going to jump.

In all-rail territory, owing to the scarcity of orders, shippers have been sending somewhat more coal to Tidewater than the local market can absorb readily. Some of it has got on demurrage and is causing some unsettlement. Between 1,500 and 1,600 cars were reported standing at the piers at the end of the week.

Current quotations are shown in the Weekly Review.

UPPER POTOMAC

Mines are not troubled so much by a shortage of cars as they were during a part of September and hence it has been possible to increase production somewhat on the line of the Western Maryland. Georges Creek production is not being increased materially but the deficiency is being taken care of in the Meyersdale field where many strikers are working. Aware of that fact, Georges Creek operators are bringing eviction proceedings so as to make room for men who will work. As it is necessary to dump all coal produced into Eastern markets the price is off.

FAIRMONT

Changes in the Eastern market have been very rapid and peculiar. Much coal billed to the Lakes is being thrown back on producers who have to find a market for it in the West and that is creating confusion. The B. & O. is assigning cars and that is only aggravating conditions connected with an acute car shortage. The Tidewater demand is extremely light. Coke production is being increased.

South

BIRMINGHAM

Buyers of steam coal are maintaining a rather indifferent attitude toward the market. Consumers are placing orders for immediate needs only with requests for prompt shipment, and are apparently evidencing no desire to stock coal. The principal demand is coming from small industries and utilities in Alabama, Mississippi and Georgia, while some run of mine is being sold for heating public buildings.

A few days of cool weather has created a more insistent demand for domestic. Conditions incident to an increased supply have not improved, the light demand for steam, together with the shortage of equipment retarding both production and movement very materially. Prices for all grades of domestic are stiff. Quotations on steam have eased off to some extent.

Car supply on the Southern the past week has shown some little improvement, but the situation as a whole is little if any better than a week ago. Production is around 345,000 tons per week.

VIRGINIA

Virginia mines are recovering in a measure from the handicap of a car shortage. The output has been increased to 66 per cent, with C. C. & O. mines leading all others. Although there is not a stiff demand for coal, no losses have been sustained so far from a lack or orders, owing to the shortage of equipment.

Anthracite

Rigid Domestic Rationing Eases Tension in East

Western Markets Still Await Hard Coal—Too Late to Avert Shortage in Northwest—Independent Quotations Are Reduced—Steam Sizes Burdensome.

The domestic situation is more reassuring as strict rationing has distributed a little coal over a wide area in the East. Western points are not expected to receive much tonnage for another 60 days. The Lakes are beginning to get hard coal—200,000 tons since mining was resumed—but it is realized that winter will find the Northwest far short of its requirements.

Independent quotations show a lower range. There is less tendency to buy $12-coal, and the majority of the independents are adhering to the $9.25 maximum for the family coals. Steam sizes are in heavy oversupply and the market has softened perceptibly.

PHILADELPHIA

Cold weather has brought a snap to the retail trade that is not desired by the dealers. The consumer is calling strongly for coal. Most yards are on the verge of emptiness. To complicate the situation many consumers have been found who have duplicated orders and often refuse coal when it is delivered.

Wholesale prices seem to be reaching a stable basis now, as the efforts to bring the independents into line by the fuel commission seem to be nearing success. However, it is still believed that a few of the small independents will continue to charge $9.50. So far nothing has been given out as to the policy of two or three concerns who were reported to be asking $12 to $13. It is the belief that there is no law by which the commission can set prices, and some intimate that it is illegal if they even attempt to.

Many soft spots have developed in the steam trade, and while the companies are still able to dispose of their production without resorting to their storage yards, the independents are finding it difficult to move theirs. Price shading is in evidence.

NEW YORK

The substitution of oil burners and soft coal is blamed in part for the accumulation of steam coals. They are backing up on the producers to an extent that is causing no little concern although it is realized that the turning on of steam heat will create a better demand for buckwheat.

The quantity of steam sizes at Tidewater is not only demoralizing the market, but it is causing delay in unloading cars. Barley is the weakest size.

It is a seller's market in the sizes above pea and a buyer's market in the sizes below. While there is a strong demand for the coal at the circular prices, retailers are not quite as willing to pay upward of $12 a ton as they were for a time after the resumption of mining.

Consumers are not quite as clamorous as dealers had feared they would be. A large tonnage of soft coal has been placed in apartment houses, business buildings, schools and public institutions of all kinds. This has made more tonnage available for use of the small consumer, and with a careful rationing of the supply a large percentage of the public will have a little anthracite by the time it is actually needed.

BALTIMORE

Dealers are being swamped with orders now that there is a snap in the atmosphere. Less than 60 per cent of immediate needs, entirely outside of any coal for storage over the winter is now running here. Dealers are sticking to small lot deliveries but even this does not meet the situation as consumers generally are refusing to take bituminous coal as a substitute.

In view of the fact that Baltimore dealers are still getting practically only independent coal at high prices the majority of dealers are still forced to sell the more popular grades at $16 per gross ton. Officials of the Maryland Distribution Committee who have been investigating conditions have openly laid the greater part of the trouble to this fact.

ANTHRACITE FIELDS

The mines are all working to capacity and they have not been hit as badly by the car shortage this week. There are no labor disturbances anywhere in the region.

There is no demand for the steam sizes. Some of the companies are complaining about this.

BUFFALO

The demand keeps up, but people understand the situation and do not try to get coal in quantity. Nobody is getting more than about half as much as was received a year ago. Lake shipments are also cut down.

Lake shipments last week were 71,700 tons, of which 29,500 tons cleared for Milwaukee, 21,200 for Duluth and Superior, 14,200 for Chicago and 7,500 for Sheboygan. Freight rates are 50c.@55c. to Chicago, 50c. to Milwaukee, 45c.@50c. to Sheboygan and 40c. to Duluth.

BOSTON

Shipments are slowly dribbling through all-rail, and practically every well-connected dealer has had a fair month's quota since mining was resumed. Tidewater dealers have perhaps had better receipts in proportion, but this is due rather to eccentricities of car-supply than to any design on the part of shippers.

Prepared sizes are being distributed in sparing amounts, but during the mild weather there was very much less public anxiety in evidence than was expected. Householders have apparently concluded that somehow or other they will manage to get through the winter and they are gracefully accepting the situation. Or, it may be, the situation is not as distressful as has been made out.

Coke

UNIONTOWN

Coal buyers are retaining their advantage in the market by limiting purchases to a minimum and operators, faced with the problem of keeping their working forces together are forced to close sales at figures they claim out of proportion to present production costs. The car situation is a bit easier. Because of the railroad situation, the carriers are keeping close check on cars placed for loading and are demanding that a consignee be named as shortly as possible after a car is loaded. That condition also helps to soften the market.

The strike of Connellsville miners has ceased to be a matter of public interest. At practically all the larger plants there are groups of "hold-outs" but at the same time many of them have returned to work.

The trade is quoting $3@$3.25 for steam coal. Three-quarter lump is $3.25@$3.50 with byproduct, $3.50@$3.75.

CONNELLSVILLE

The break in Connellsville coke prices has begun at last. A few days ago sales were made at $11 and more was offered freely at that figure without finding takers, resulting in some sales being made at $10.50. The market has ample room for further declines, since coke has frequently sold at less than its natural ratio to coal, according to the formula of 1½ tons of coal at the market price plus the cost of coking. With the coal market at $3.50, and the coking cost, with the present high wage scale, about $1.25, the formula would make $6.50 as the coke price.

Foundry coke has also declined, but somewhat sluggishly as some foundries, not well posted, have been paying close to the old prices. The market is now quotable at $12@$12.50.

The condition no longer obtains of there being an indefinite number of blast furnaces waiting to resume and willing to pay the open market price. Pig iron consumers in general evidently are unable to pay present prices, while furnaces could not make lower figures except with cheaper coke. As furnaces get into operation deliveries are made on old contracts and thus the need of consumers to buy pig iron in the open market is reduced.

The *Courier* reports coke production during the week ended Oct. 7 at 91,100 tons by the furnace ovens and 35,250 tons by the merchant ovens, a total of 126,350 tons, an increase of 7,670 tons.

BUFFALO

Demand continues light, for the local plants are running actively and they are able to supply the furnaces pretty well. At the same time the coke situation at the big Pennsylvania oven centers is not good.

Chicago and Midwest

Regional Market Seems Ready for Upturn Now

Domestic Demand Continues Heavy and Steam "Buyers' Strike" Gives Signs of Breaking—Car Service Improves Only Slightly.

Continuance of a heavy domestic demand and very little, if any, improvement in car service by the roads keep the markets of this region about on the level of last week. While it is true there is no rush of steam buyers and a good deal of those grades are getting into distress almost daily, yet railroads are taking heavier tonnages for their own use and other big steam consumers are displaying more interest in deliveries on contracts. With the approach of colder weather the coal industry gets into a better position temporarily—only to prepare gloomily for greater difficulties later on.

Car supply throughout southern Illinois is still in the neighborhood of 30 per cent, while northern and central fields are down to 45 or 50 per cent—and glad the service is no better. West Kentucky is running about 20 per cent of the time and Indiana fields somewhat less than half time. Prices generally throughout this section are unchanged from last week, except in Kentucky where a slight weakening of mine run and screenings was noticed.

CHICAGO

A tightening up of the domestic market, after the slight softening, and a certain uneasiness on the part of some of the big steam buyers who are still "on strike" are signs which coal men are reading just now. Many retailers who have not attempted to stock anything, are trying to do so now, finally concluding that domestic prices are not due for a drop. Householders who have been following to the letter the retailers' advice to buy only in small quantities, are now asking for a good deal more than the yards can deliver. The result is a considerable backwatering of orders followed by an epidemic of coal prescriptions signed by many doctors.

Some hard coal has reached here but only a little smokeless. The anthracite mine price quoted here ranges $8.50@$9.50 on buckwheat and pea and up to $12 on the larger sizes. Smokeless mine run and lump sells for $6.25@$7 except the little which is jobbed.

Several elements are combining to take some of the rigidity out of the "buyers' strike" among big consumers of steam coals. One is that a good many short contracts for oil expire at once and many may not be renewed. Another is that few industries are stocked with coal and the third is that it seems more apparent every day that the strangulation of rail transportation will not be relieved soon and cold weather with an inevitable rush of demand is due at any moment. For these reasons there are fewer coal contract cancellations nowadays.

WESTERN KENTUCKY

The general markets are weaker and with industrial consumers refusing to stock, and retailers buying only for immediate demand, producers are finding it harder to sell coal. Unless there is material improvement soon in demand either for domestic or steam, any increase in car supply just now would find the market slumping further. The reported car supply averages around 20 per cent on the L. & N. railroad, and about 35 per cent on the Illinois Central.

Many coal men here believe that retailers have kept consumers from stocking, in the belief that prices would be lower, and that with cold weather a heavy demand will develop for prepared. Right now there appears to be an increasing tendency for domestic consumers to take up better grades of clean mine run for heating use.

Lump coal which has been strong at $5 and over, is now quoted at $4.75 in some instances for off-grade, while supplies are being offered at $4.85@$5.25 in quantities. Mine run has broken to $2.75@$3.25 and screenings, $2.75@$3.

SOUTHERN ILLINOIS

Lack of rail equipment and failure to sell steam sizes stand out strong as obstacles in the Carterville field in southern Illinois. At one or two places a little steam is held without billing and if cars were plentiful there would be a lot of this stuff on hand. Railroads are buying again, however, and the car situation is just a trifle better than it has been. The demand for lump, egg and nut is unusually good.

Somewhat similar conditions prevail in the Duquoin and East Jackson field. In the Mt. Olive district working time is two or three days a week. The railroad tonnage is heavy. Several trunk lines through this district are tied up, especially the Wabash, which is unable to deliver to the terminal at St. Louis on account of lack of motive power on trunk lines out from St. Louis, principally the Frisco.

In the Standard field lack of orders for lump has seen mines with no-bills on track at night. The steam situation is unusually bad. Railroad tonnage is fair, everything considered.

ST. LOUIS

A little more seasonable weather has started the domestic demand on the cheaper grades. The light tonnage of Carterville is going at a premium of $5.50@$6 at the mine. The retail price is $9.50. Mt. Olive, which is available as a rule, is $4 at the mine and retails at $7.50. This makes Mt. Olive the popular coal.

Country domestic and steam demand are both picking up. Locally steam is not selling, except from day to day. Very little coal is piling up in storage. Railroad movement has shown some improvement though hundreds of cars are held in East St. Louis on account of the inability of the Frisco and Missouri Pacific to handle them.

INDIANAPOLIS

Demand has been more active during the past week, due largely to the imminence of cold weather. Most of the demand is coming from the domestic consumer and retail dealers generally are limiting their sales to three tons in order to have enough to go around.

There has been no particular strength in the price situation during the past week, although there has been a fairly ready market at the established prices. Domestic coal of the Indiana grades is retailing around $7@$8.50, while foreign-mined coal, such as Pocahontas, Kentucky and West Virginia, is retailing around $11.50 for the prepared sizes, with about 50c. lower for mine run. Demand for steam coal is fair.

LOUISVILLE

Heavy rains for the past several days are resulting in better river stages and packets are resuming operations. A number of coal tows stranded in the upper Ohio are expected to reach Cincinnati on the rise and some of this coal will come to Louisville and sister cities. General demand is slow. Everyone appears to be getting immediate supplies and at present prices there is no stocking demand reported. When the Lake movement stops this will throw more production to the industrial and domestic consumers, and may ease prices.

Retailers are hot over the fact that there is a range of $2 a ton and more between mine run and lump. A few retailers who have their own screening equipment are taking advantage of the fact, but others are endeavoring to get domestic users to take mine run.

It is hard to sell coal now, not only locally but north of the river and in other sections. There is a little better rural demand than there has been, but it appears as if the country generally is anticipating lower markets, and is not worrying. Car supply is reported at about 20 per cent on most lines, with the Illinois Central attaining about 35 per cent.

Canada

TORONTO

The volume of business is light with conditions unsettled and prices variable. Limited shipments of anthracite received from the line companies are being retailed at $15.50 per ton, the price fixed by the Fuel Controller, but some dealers are obtaining supplies from independent companies, and selling considerably higher.

The price of ¾-in. lump in carload lots, f.o.b. destination, ranges $8.75@$10.25, and Pennsylvania smokeless about $9, retailing for $12. Steam lump retails at $13.25. Representatives of British coal companies are making a strong effort to obtain a footing in this market and prices are lower.

Eastern Inland

Seasonable Temperature Tends to Stabilize Market

Active Call, with Prices Up, for Domestic Coal—Condition Reflected in Steam Section—Car Situation Worse, Production Falls Further—Lake Congestion Slowly Clearing.

More stability in the market has appeared with colder weather. Domestic coal is in active call with higher prices and the steam section gets a reflection of this. Prices on industrial fuels, however, are still weak. The Ohio fair-price list is driving much coal out of the state and causing an influx of "foreign" coal at advanced figures.

The car situation is worse and production has slipped down another notch. Old connections are being heavily worked and this leaves but little free tonnage offering.

Heavy Lake shipments have left a considerable tonnage of screenings, which are being absorbed with some price softening. The congestion at lower ports is clearing—cargo coal is being loaded faster than it comes in, and the 16,000,000-ton goal this season will be difficult of attainment unless Lake buyers become more active. It will be necessary to move approximately 1,000,000 tons weekly during the balance of the season to reach the above figure.

PITTSBURGH

Production continues at much the same rate as for several weeks past. There is somewhat louder complaint as to car shortage, this being due, apparently, rather to operators wishing to run at higher rates than to there being any decrease in the number of cars furnished the district.

The turnover in the open market has decreased farther. Consumers seem to be supplied quite well by their regular sources of supply and there is little demand for odd lots in the open market. Prices have been softening and are likely to go lower unless there is a decided change in fundamental conditions. Consumers are exhibiting no disposition to stock coal and apparently expect materially lower prices when Lake shipments are completed.

The market stands at about $3.50 for good grades of steam, $4@$4.25 for byproduct, $4.50@$4.75 for best gas, all mine run, and about $5.25 for best domestic 1¼-in. lump.

EASTERN OHIO

Stabilization of the spot market resulting from a more plentiful supply of coal overtaking immediate needs and the lower temperatures prevailing throughout this section have combined to create a more general and widespread demand. Inquiries from retail dealers have significantly increased during the past few days and retailers are besieged with orders from domestic consumers, the majority of whom have delayed filling their bins in the hope that domestic fuels might be obtained at lower prices than those quoted some weeks back. However, some of the larger operators assert that because of heavy shipments to the Lake there is an abundance of cheap slack in the market.

Car shortage and transportation disability continue to occupy the foreground as the main hindrance preventing maximum production. During the week ended Oct. 7, mines produced only 305,000 tons, which is about 49 per cent of capacity. This is a decrease of 15,000 tons under last wek and 35,000 tons under the second preceding week.

Cumulative figures indicate that up to Oct. 7 this field has produced 7,500,000 tons during the calendar year. The potential capacity for that period is placed at 24,117,000 tons, from which it will be seen that only 31.5 per cent of capacity has been produced.

The majority of spot prices on Ohio coals approximate figures set by the state authorities under the emergency legislation, but in some cases are less than the maximum. Eastern Ohio slack is $3.31, nut and slack, $3.31 mine run, $3.56, and various grades of lump, $3.81. Middle District slack is $3.99, mine run, $4.24, lump, $4.49. West Virginia Panhandle coal is being sold at approximately the figures prevailing on eastern Ohio. Very little West Virginia and eastern Kentucky coal is yet coming into this section because of the transportation situation and quotations on these coals are around $6.50 for mine run and $8 for lump.

Bituminous coal receipts at Cleveland during the week ended Oct. 7 were the largest in many months, total receipts amounting to 1,831 cars which is an increase of 560 cars above the quantity received during the preceding week. Industries received 1,548 cars and 283 cars were for retail yards, the increase being almost entirely in steam coal consigned to industries.

Lake coal is being floated faster than it is coming forward. Stocks on hand at the lower docks are decreasing.

BUFFALO

Jobbers are still declaring that it will not be long before the car supply is so small that it will be difficult, if not impossible, to move coal as fast as it is needed. The squeeze so confidently predicted has not arrived on schedule and the hold-offs are hoping with no little confidence that the shortage will not be much if any greater than it is at present.

Somehow it is impossible to keep this country from booming, no matter how many snags it strikes. Maybe they are needed to keep us from forgetting how to steer the ship in a storm. We used to think and work in oxcart units, even in the days of plenty of people not so very old. Now we must think in automobile and aeroplane units and do it ahead of even their time or be run over. Maybe we can afford to give the union miner an automobile pay and have some left.

Prices vary as widely as ever. The range is $5@$5.50 for Pittsburgh gas lump, and Allegheny Valley mine run, $3.75@$4.25, with some No. 8 at $4.75 for lump. Slack is not as high as mine run, about $3.25@$3.50.

COLUMBUS

A reaction has taken place and all grades are stronger. Demand for lump is the strongest feature with sales made around $5.50 for Hocking. The regulations of the Ohio Fuel Administration relative to maximum prices are having the effect of driving the lump out of the state. Retailers in all sections are trying to buy stocks as the recent cold spell has forced the consumers into the market.

Retail stocks are almost nothing and the public is apparently waking up to the danger of the situation. Many of the dealers are compelled to buy West Virginia and Kentucky lump at high prices to take care of the demand. Retail prices are showing some declines with Hocking lump selling around $8@$9. West Virginia splints are $10@$10.50, and Pocahontas, when obtainable is higher.

Steam business is not as active, although railroads are taking a large tonnage. The Lake trade is now booming with a large tonnage moving from Ohio mines to the lower ports. Much of this is mine run which is bought around $3.25. Some mine run which is incapable of being screened is selling at slightly less figures.

DETROIT

Receipts are rather more liberal. According to railway figures, 1,396 cars were received in 48 hours ending at midnight, Oct. 11. Average daily requirements, excluding railway coal, are approximately 550 cars.

There is not a very active demand. The greater part of the business is apparently continuing on a hand-to-mouth basis, representing purchases by industrial plants that have exhausted their reserves. Assuming that a reduction of prices is likely to come after the close of the Lake movement, the retailers are striving to guard against being caught with too much coal acquired at present prices. The householder demand represents a makeshift to tide the buyer over to a time when he hopes to find anthracite available.

Smokeless lump and egg is $8.50, mine run, $6.50@$6.75. Hocking lump and egg is $6, mine run, $3.75@$4, nut, pea and slack, $3.25@$3.50. Pittsburgh No. 8, 3-in. lump is $5, mine run, $4@$4.25, slack, $3@$3.75, Fairmont lump is $5, mine run, $4.50@$4.75, slack, $4.50. Kentucky lump and egg is $6@$6.25, mine run, $4.75, slack, $4.50@$4.75.

NORTHERN PANHANDLE

Mines are experiencing difficulty in securing all the cars they need, and in moving coal in the usual channels even after cars are secured. Lines to the Lakes are choked with loads. The fact that so many mines load railroad fuel is helping to maintain an output. Prices are lower all along the line in view of the large volume of coal turned back from the Lakes.

Northwest

Coal Cargoes Up Lakes Not So Numerous Now

Unprecedented Shipments Fill Demand During Past Weeks—Rail Coal Is Arriving Too—Low-Grade Stocks on Hand Worry Dealers.

The tremendous flow of cargo coal up the Lakes gave evidence, at the end of last week, of slacking off considerably and the keen edge of Northwest demand was somewhat blunted so that nobody worried much even though cold weather is arriving and household demand for hard coal is getting brisker with small shipments to satisfy it. In some markets the price of anthracite continues to stick around last year's scale. Since the general advance on smokeless coals a short time ago there have been no further ascents of quotations on any domestic coals.

A fair flow of rail coal continues, some of it crossing Lake Michigan by carferry from the East, some coming up from Illinois and some from the lignite fields of North Dakota. The result is so much coal is here that dealers who stocked lightly on lower-grade fuels during the summer anticipating a worse October condition than prevails, are having trouble unloading.

MILWAUKEE

The coal situation is improving with recent heavy receipts at the docks. There is plenty of soft coal but anthracite is bound to be scarce. But if no rail blockades occur during that season the supply may prevent discomfort. At present anthracite is being sold at the prices current before the strike. Anthracite is moving to the Northwest very freely by rail, carferrying across the lake.

Coal cargoes are coming in faster than at any time this season. Thus far in October seven cargoes of anthracite and thirty-eight cargoes of soft coal have reached the docks, the former aggregating 56,200 tons and the latter 336,316 tons. Cargo receipts since the opening of navigation to date aggregate 56,900 tons of anthracite and 1,627,271 tons of soft coal.

Following is the complete schedule of prices promulgated by the dock companies on Oct. 1:

Anthracite (retail) Egg, $15.75; stove, $16; nut, $15.95; pea, $14; buckwheat, $11.50.

Bituminous (wholesale) Pittsburg, Hocking & Youghiogheny, $9.75; pile run, $9; screenings, $9. West Virginia screened, $10.25; pile run, $9.75; screenings, $9.75. Pocahontas screened, $13.75; mine run, $9.75; screenings, $9.75; smithing, $11.75. Illinois and Indiana screened, $10.25; pile run, $9.75; screenings, $9.75. Coke, large sizes, $16; pea and nut, $13.

MINNEAPOLIS

The wholesale trade is pretty well over its fears of a serious shortage and is now studying the opposite danger of having too much of the high-priced but lower-grade soft coal, which had to be bought when coal first became available. The better coal is now available, and it is a commercial puzzle what to do with the poorer grades on hand.

The fuel distributor has made an announcement that the Northwest is reasonably assured against any serious shortage of soft coal. This has been realized for some time past, since it became apparent that there would be a reasonable functioning of the railroads. It is true that the interior has not been buying heavily. So far movement from docks is some 20 or 25 per cent lower than a year ago.

It is anticipated that prices on both soft coal and hard will average at least $1 a ton higher than a year ago, although no new hard coal has reached these cities, and no new prices have been announced.

The demand for steam coal is limited. Buyers are awaiting lower prices. They may win in their position, for there is accumulating a certain amount which will doubtless have to be offered at reductions.

DULUTH

Official figures just made public confirm reports that there was a heavy falling off in shipments from the docks during September. Only 16,178 cars went out, of which approximately one-third were loaded from Duluth and two-thirds from Superior. Last year 18,735 cars were shipped.

Receipts of bituminous coal during September were gratifying. In all 1,489,000 tons were received as compared with 657,170 during the same month last year, but anthracite receipts were only 10,600 tons as against 182,600 tons in September last year. For the season to Sept. 30, receipts of anthracite aggregated 27,600 tons, as compared with 1,380,000 tons last year, and bituminous receipts were 1,963,800 tons against 7,186,426 tons last year.

Prices on anthracite have been set as the same as during the latter part of 1921. Coal will go from the docks as follows: Stove, $12.90; nut, $12.75; egg, $12.50; pea, $11; buckwheat, $8.50. Anthracite is being allocated by the fuel administrator at St. Paul. The four cargoes which were received this week were sent to North and South Dakota, the Mesaba iron range cities and villages and to Duluth and Superior. Bituminous prices remain firm as last quoted.

Beside the four anthracite cargoes 52 of bituminous arrived here this week. It is thought that this will prove the high water mark in shipments as only 19 vessels are reported on the way.

New England

Steam Demand Still Quiet; Prospects Not Very Bright

Light Industrial Production and Use of Oil and Electricity Make Gaging of Requirements Difficult—Only Scattered Inquiry Expected—British Receipts Wane.

Demand for all grades of steam coal is extremely quiet. Inquiry is restricted to small users, and apparently there is little prospect of any comprehensive business for some weeks to come. The textile and other industries are still on light production and so much tonnage has been replaced by oil and electric power this year that it is more difficult than ever to gage probable requirements.

The trade seems to have settled down into an attitude where every sale is so much to the good, and only scattered inquiry is expected the balance of the year. Receipts of British coals are slowing down.

Pocahontas and New River shippers are sharing the general dullness. Receipts here are somewhat better on contract, due to marked improvement in dispatch at the various rehandling wharves, but spot transactions are very few. Coal at Newport News and Norfolk is not only in plentiful supply but accumulations show a material increase from day to day. The Western market is not proving as strong as anticipated, and that situation is throwing an extra volume to Tidewater.

While cargoes of British coal are still coming in and more are on the way, the harbor congestion is rapidly clearing up. So far as we can learn there are practically no new sales except of tail-ends that the shippers find themselves obliged to dispose of. On these latter the average price has ranged $6.50@$7 delivered alongside, although in a few instances coal has been sold on cars at the same figures. September showed heavy receipts of foreign coal but by the end of October the trade expects to see the last of these cargoes.

For the Pennsylvania grades there continues only mild inquiry. Orders are especially scarce within easy reach of Tidewater where Hampton Roads coals can be had at reasonable prices. More than a few operators represented in this market are obliged to consider shutting down through lack of business at prices that will pay the present wage scale. Some of the mining interests have already set a minimum price, and unless current demand takes a brace curtailed production is inevitable.

Cincinnati Gateway

Domestic and Smokeless Exceed Gas-Coal Values

Drop in Steam Price Duplicated in Gas and Byproduct Quotations—Competition Expected to Cause Further Recession—Lake Business Waning—Rail and River Shipping Grows.

Domestic and smokeless fuels are the star features in the Cincinnati market just now. They have crowded gas coal from the center of the stage. The precipitous drop that was taken in the price of steam coal a week ago has been followed with a loss in values on the part of gas and byproduct. Those who are market-wise expect that there will be even further recessions, because of the pressure of competition that is being brought to bear by other fields than those marketing through this focal point.

The Lake business continues to dwindle, although there is still a large tonnage headed that way but there are no cargo takers here now and little buying is being done to help along the supplies piling up. Rail and river shipping is a growing feature here with several companies announcing that they intend to expand in this direction.

HIGH-VOLATILE FIELDS

KANAWHA

Kanawha mines are still laboring under the handicap of a car shortage which limits working time to two days a week. The market for steam coal is decidedly sluggish. That the price is not lower is of course due to the shortage of cars and the limitation it imposes upon production. Byproducts is in somewhat better demand than steam, and prepared grades, being extremely scarce, are still on a high level. Failure of industrial buyers to place orders is making for a scarcity of the prepared grades, which is of course augmented by the shortage of cars.

LOGAN AND THACKER

The output in the Logan territory is not more than a third of normal. Producers are not able to make prompt Lake deliveries and are in general experiencing difficulty in getting coal to their customers in the West which affords the best market. Buyers are securing coal in small lots with a view to forcing still lower prices.

The only factor which prevents capacity production in the Kenova-Thacker field is a shortage of cars. Railroad facilities, however, have been somewhat improved. The best market is in the West but prices are undergoing many changes and the general run is on a lower level than Ohio fixed prices. The Lake movement is somewhat better and cars are coming back in larger numbers.

NORTHEASTERN KENTUCKY

Little improvement is to be observed in transportation conditions. Mines are not producing more than 28 per cent of capacity. There is a little freer demand at the Lakes and it is possible to get more coal through. Prices show a downward trend, at least as to steam coal, which ranges $4@$4.75. Prepared grades are much higher. Gas coal is in better demand than steam fuel.

LOW-VOLATILE FIELDS

NEW RIVER AND THE GULF

With an inactive market for smokeless in the East, generally speaking, and particularly at Tidewater where coal has accumulated to some extent, a limited production in New River territory almost suffices to take care of the demand for mine run. The limited car supply is having a tendency to check the downward trend of prices. Mine run is commanding as high as $6.50 in certain Western markets.

Gulf mines are not operating more than two days and a half a week owing to poor transportation facilities. There is no probability that there will be any immediate improvement in the situation. Poor transportation facilities make less difference than would be the case if there were a stronger demand in Eastern markets and particularly at Tidewater. Better markets in the West are not helping Gulf producers, however, inasmuch as the railroads are unable to furnish facilities to move coal to such markets. There are more miners in the smokeless fields than there are jobs.

POCAHONTAS AND TUG RIVER

Conditions on the N. & W. appear to be somewhat more conductive to a larger production, but mines are not producing in the aggregate more than half of potential capacity. The bulk of the output is still being forced into Eastern markets owing to the inability of shippers to get much coal through to the West. The Tidewater market is decidedly sluggish.

Although there has been a slight improvement in the Pocahontas region, the reverse is true as to Tug River mines where for a time recently production has been cut to the very quick owing to transportation disabilities, which precluded a large movement to Western markets. Although there is not a particularly brisk market, the demand is still in excess of the supply, since mines are hardly producing enough to take care of contract requirements.

CINCINNATI

The smokeless situation is in rather a bad way because of the scant number of smaller cars to move coal to the Inland markets and the endeavor on the part of the larger companies to live up to their contract requirements. What coal there is falling into the hands of the wholesalers is held at prohibitive figures. Little or no screenings are coming through and this makes its price on the basis of the run of mine.

Domestic buyers are flocking to this market in increasing numbers as a natural result of the cold spell. While there are a large number of mines turning to making prepared, as a result of the drop in the price of mine run yet the supplies are still inadequate.

The car supply is still in a horrible shape. Coal River, Cabin Creek and other Kanawha fields that have shipped only a small amount in many months are particularly hard hit, now that they have labor available.

The retail situation is in a cluttered state. Householders, caught with bare cellars when the cold snap came, are clamoring for coal. There is no change in prices.

West

DENVER

Production in Colorado, according to many of the larger operators, is less than 50 per cent of normal, thanks to bad transportation. However, all Colorado points are well taken care of as the supply is delivered by system cars, which are kept within the confines of the state.

All classes of coal are plentiful in supply in Denver with the exception of anthracite. Anthracite production has been stopped in Colorado on account on the car shortage. No changes in prices at the mines have been made since Sept. 1. Lump varies from $6 @$8. Nut is selling $5.50@$7.50, mine run, $4.25@$5.50, slack, $3@$4.50.

KANSAS CITY

The Kansas coal fields are getting better running time than the average of other fields and as a result the market is fairly easy and prices steady. Fuel oil continues a great factor. Some steam plants are still changing over to oil and some are changing back to coal, but on the whole, it would seem that in spite of what the operators have done in the way of reducing prices, oil is gaining. One reason for this is that when the operators made the price $2.50 for slack they had to make the price for domestic grades, lump and nut, $6, and this has caused such general dissatisfaction that there is difficulty in maintaining the $6 level. Much has sold down to $5.50.

SALT LAKE CITY

Business is still quiet. The weather continues summerlike and those who would buy coal for storage purposes are waiting for the findings of the grand jury, which set out a few weeks ago to examine the price-fixing charges preferred against the operators and dealers by a local newspaper. It is being stated that no indictments will be made.

The car shortage is hampering the mines and production has fallen considerably of late. One coal official declared it is now only 45 per cent of capacity. It is estimated that Salt Lake City has but 10,000 tons in its yards now.

News Items From Field and Trade

ALASKA

The Alaska Agricultural College and School of Mines opened at Fairbanks Sept. 18. A large number have made arrangements to enter. Miners all over Alaska wish to take instructions as soon as their working season closes. The school, organized and headed by Charles Ernest Burnett, formerly federal judge in the territory, opens with the largest library in Alaska, made up of gifts by individuals.

CONNECTICUT

The Elm City Coal Co., New Haven, has recently been incorporated to engage in the coal business. The capital stock is $25,000, and the incorporators include: Jacob Rodofsky, M. Y. Lifsher, and A. J. White; all of New Haven.

The Capitol Coal Co., of Hartford, has filed papers of incorporation under the laws of Connecticut to engage in the retail coal business The capital stock is $50,000, and the incorporators are: Jacob Berson; Joseph J. Berson; and Joseph J. Trachtenooth; all of Hartford.

ILLINOIS

The Callaway County Coal Co., which had been operating a strip mine near Carrington, Mo., for nine years, but which was recently dissolved, has sold its machinery and equipment to F. L. Crosby and Lester J. Miller, of Mexico; L. R. Herrick, of Farmer City, Ill., G. L. McCutcheon, of Canton, Ill., and Carter Norris, of Fulton, several former members of the old firm, who will operate a new corporation under the name of the **Cuba Coal Co.** The company has purchased 80 acres of land near Cuba, Ill., which, according to a government survey, has a decided advantage over the old Carrington field. The equipment is now being moved and the company expects to be in operation by the middle of November.

Coal has been found near Mt. Vernon, in Posey County, at a depth of 75 ft. A 30-in. vein was struck at 32 ft., but the thickness of the lower vein is more than 4 ft. The prospecting is being done by **Lawrence & Bratcher**, who have mines in Illinois. Work on the mine proper will be started in a short time.

The Verona Coal Co., Verona, has been incorporated with a capital stock of $15,000. The incorporators are: C. H. Fellingham, Fred Harford, R. J. Glenn, J. P. Handford.

Coal hoisting at the **Litchfield mine**, purchased several weeks ago at receiver's sale by **Harry Tanner**, Pana, will be in progress within a month. The mine has been sunk lower in order to tap a lower vein of coal. The present vein is six feet thick.

INDIANA

A petition for articles of incorporation for the **Chicago, Attica & Southern R.R. Co.**, which will take over and operate the abandoned Chicago & Indiana Ry., known as the Indiana coal road, will be filed with the secretary of state in Indianapolis soon. While the mines in the extreme southern section have been abandoned, the northern part of the line never has been developed. Brick and clay plants are strung along most every section of the line and many plants were threatened with extinction when the old line was abandoned. Charles F. Probst of Chicago and George Barnard, of Indianapolis, attorney and formerly a member of the Indiana public service commission head the corporation. Stock to the amount of $1,000,000 will be issued. The board of directors of the new company are in addition to Mr. Probst and Mr. Barnard, Roland G. Butler, Urbana, Ill., Shannon Nave, Attica, Ind.; Fred Lyons, Brook, Ind.; J. N. Rhode, Pine Village, Ind., and E. Scott Boone, Kingman, Ind.

The Dana Collieries Co. has been formed at Indianapolis for the purpose of mining coal. The company has a capital stock of $100,000 and the organizers are George Hilgemeier, Anna Hilgemeier and William K. Sprouls.

Felix M. McWhirter, president of the Peoples' State Bank in Indianapolis, has been asked by C. E. Spens, government coal distributor, to serve as a member of the advisory committee for handling the coal distribution problem in Indiana by keeping in touch with the Indiana fuel situation and informing the federal fuel administration of the needs of industry.

Mayor Shank of Indianapolis, has named five citizens to serve as a committee to work with the fuel administration in regulating distribution and prices of coal. Among the five named, two are out of the city, two have declined and one has accepted. **Arthur E. Bradshaw**, president of the Allied Coal & Material Co., has announced he will serve on the committee. The mayor has announced he will appoint others who will serve on the committee.

A consolidation is taking place between the **Indiana Bituminous Coal Operators' Association**, which is the old line labor organization of shaft mine owners, and the **Indiana Coal Producers' Association**, of strip mine men. The question of representation in Indiana on the new reorganization Committee of the joint operators' and miners' conference is now easily disposed of. The state gets two representatives, but since the strip association fuses with the main association, there is nothing in the way of giving the Brazil Block region one of the two memberships. The state will in reality have three seats because Phil. Penna, permanent chairman of the joint conference, is a member ex-officio.

KENTUCKY

In western Kentucky when strikes tied up other fields, miners made so much money that roads were full of miners who were traveling to their work in automobiles. Negro miners were always willing to buy a big car. Used cars were bringing 40 per cent more in the coal fields than in the cities. Today the coal car shortage is so severe that it is hard for miners to keep up even a "Liz" on surplus earnings. Reports of actual starvation conditions among miners of Tennessee and Kentucky fields have been made by the district office of the United Mine Workers at Knoxville, Tenn. Miners have been working but one day a week.

R. H. McCormack of Cincinnati, **E. McConnaughy** of Dayton, and **C. H. Carson** of Kalamazoo, all of the Kearns Coal Co., were visitors at the Dudley and Marian mines in the Hazard district recently.

Earle B. Heffner, who was chief engineer for McKinney Steel Co. for the past five years and more, has severed his connection with the above concern. Mr. Heffner and associates have formed the **Heffner Elkhorn Coal Co.**, having 200 acres of coal on Marrowbone. This company plans on opening up this tract at the earliest possible moment and installing an up-to-date mine in all respects.

The Acosta Mining Co. has been formed by W. H. Cottingham, W. C. Burch and Ed. Purciful.

The Smith-Abston Coal Co. has been capitalized at Idamay, Ky. for $20,000 and incorporation papers have been filed. The incorporators are M. V. Abston, G. B. Smith and G. R. Abston.

MISSOURI

The Carter Coal Co., of Wellington, has been incorporated with a capital stock of $60,000 and will promote and conduct a coal mine as well as a mercantile establishment in connection with it. The incorporators are Fred D. Flucke, Charles G. Grumke, August Ahring, Herman H. Limberg, H. G. Willie, Edward H. Kuhlman, Henry G. Drewel and Adolph H. Kuhlman.

MONTANA

At a meeting held late in September, in Butte, 3,000 miners, decided to form a union of their own to be in a position to treat with operators when necessary. Nothing was said about wages, leaving the impression that the men were satisfied with the recent raise for the present.

Albert Griffin has severed his connection with the Keene Mine, Bair-Collins Coal Co., Roundup. Mr. Griffin was superintendent.

NEW YORK

In order to give greater attention to C-H business in western New York and Ontario, a branch office has been opened by the **Cutler Hammer Mfg. Co.** This office is located in Buffalo. B. A. Hansen, formerly located in New York, has been placed in charge.

J. B. Clark, Jr. has recently become associated with the Pennsylvania Crusher Co. as sales engineer, and will make his headquarters at the company's New York office. For a number of years, Mr. Clark has been associated with the Koppers Company of Pittsburgh in the erection and operation of byproduct coke plants, including the Seaboard plant at Jersey City.

Grant B. McLaughlin & Co., on Oct. 1 opened a coal office at 713 Mutual Life Bldg., Buffalo. Mr. McLaughlin was formerly connected with the Donner Steel Co. and will also look after the iron trade.

OHIO

C. A. Clyborne, president of the Three States Coal Co., with headquarters at Bluefield, was a recent visitor to the Cincinnati office of his company.

For the third time, the **Columbus Board of Education** has asked for bids for approximately 10,000 tons of lump coal for the winter fuel supply. The last date for opening bids has been fixed at Oct. 23. On former occasions all of the bids were rejected.

Quite a few coal companies, mostly for mining and distribution purposes, have been chartered recently under the laws of Ohio. Among the number are: **Windsor Coal Co.**, Steubenville, capital, $25,000, to mine in Jefferson County, incorporators, Harry A. Bell, Thomas Rock, Bates Williams, A. Barakat and S. S. Hill. **The Maghes Coal Co.**, of Byesville, capital, $25,000, by Ameen J. Maghes, Samuel Barnicker, Jacob Weiner, James W. Bell and E. M. Johnston. **The Atlas Coal Co.**, Cleveland, capital, $10,000, by P. J. Van Dame, Samuel Horowitz, A. Lipkowitz, M. Mergner and E. R. Walters. **The Cottage Grove Coal Co.**, of Akron, capital, $75,000, by Nathan M. Berk, S. Bernard Berk, Katherine Wyss, Rose Darling and George W. Coble.

PENNSYLVANIA

A State charter was granted at Harrisburg recently to the **Chestnut Hill Coal Co.**, Pottsville. It has a capital stock of $20,000, and David L. Griffiths, Pottsville, is treasurer. The purpose is mining and preparing coal for the market, and the incorporators are David L. Griffiths, Ralph M. Griffiths and Albert Morgans, all of Pottsville.

The Shaffer Coal Co., Ohiopyle, has been incorporated with a capital of $25,000. H. P. Shaffer, Terra Alta, W. Va., is treasurer, and one of the incorporators, the others being H. C. Shaffer, Cumberland, Md., and C. A. Lenhart, Ohiopyle.

The Delaware, Lackawanna & Western R.R. Co. has appealed from the assessment of anthracite tax by Auditor General Samuel S. Lewis for two months' production of coal in 1921. The appeal raises questions whether the revaluations should stand and whether coal used by the company in producing coal should be taxed. The tax involved amounts to $176,000. The latter four months of 1921 are covered by the **Glen Alden Coal Co.** ownership.

A charter has been issued to the **Fair Coal Co.**, Scranton, with a capital stock of $25,000. N. R. Brown, Scranton, is treasurer. Incorporators are: N. R. Brown, Thomas Harrington, Dunmore, and Joseph P. O'Donnell, Scranton.

TEXAS

John Wilkinson, president of District 21, United Mine Workers, has sent protests to Senator Morris Sheppard, complaining of treatment of coal miners in the central western Texas coal mines about Thurber. Mingus and other points by Texas Rangers sent into the district. It is alleged they have intimidated, threatened and otherwise attempted to coerce striking coal miners to go to work. Mr. Wilkinson has also telegraphed Attorney General Daugherty regarding the situation and has demanded an investigation by the Federal Government. The miners have been on strike for about a year and a half.

VIRGINIA

The Richmond Fuel Corporation, Richmond, has been organized and incorporated with John E. Seaton as president and Walker C. Cottrell as secretary. The company is capitalized at $50,000.

The Henrico Coal Co. has been incorporated and will develop coal lands in Henrico and Chesterfield counties. The company has a capital stock of $25,000. Frank Hagen is president and J. E. Norvell is secretary, Richmond.

WEST VIRGINIA

Claiming that the U. M. W. have refused to sign an agreement with him and that as a result of such refusal he has sustained losses amounting to $50,000, **H. M. Sipe,** a Clarksburg operator, has instituted a suit for damages against the union. The mine which Sipe desires to operate and which he claims the union will not permit him to run was leased by him from the Hudson Coal Co., one of the few companies operating on an open-shop basis in the Clarksburg coal region. Sipe alleges that the union informed him they would sign no agreement with him until the Hudson company signed the agreement and operated all its mines on the closed-shop plan. The suit is said to be based on the decision of the Supreme Court in the Coronado case. International, district and local officers of the United Mine Workers of America are named as defendants. Sipe has also instituted attachment proceedings with a view to stopping the payment of money collected by the check-off throughout Harrison County. Suits of a similar nature are said to be contemplated by other companies.

The Blue Ridge Collieries Co., a Cincinnati concern, has been granted a West Virginia Charter. Capital is 15,000 shares of no par value stock

Vice-President W. G. Polk of the Kentenia Coal Co., of Cincinnati, was a recent visitor in Bluefield.

Organization of the **Slater Creek Coal Co.** by Charleston coal men presages development on the stream named on a fairly large scale, this company being capitalized at $100,000. Its offices will be at Charleston. Having an active part in the organization are: **A. S. Guthrie, E. H. McNeil, T. C. Beury, A. J. Peck and L. S. Carter,** all of Charleston.

The Cedar Grove section of Kanawha County is to be the seat of operations of **the Cedar Grove Coal Co.,** of Danville, Boone County, which is capitalized at $100,000. Associated with J. J. McLoughlin of Danville in this concern are: Horace S. Meldahl, Paul Smith, Louise Theiling and Lillian Walker, all of Charleston.

BRITISH COLUMBIA

Consideration of the coal mining returns for the past few months indicates that some records have been made in production. **The Western Fuel Corporation of Canada** during August had an output of 85,000 tons. As far as is known this is the greatest monthly output to the credit of the company since it began coal mining. The average production for a month is 56,000 tons. **The Canadian Collieries, (Dunsmuir) Ltd.,** also has improved its showing remarkably, production for August being some 48,000 tons. **The Nanoose Wellington Collieries had a production in August** of 10,315 tons, the best record yet hung up by that corporation. The same activity prevails in the Nicola-Princeton coalfield. **The Coalmont Collieries,** for instance, jumped their production to 18,059 tons. This is the highest mark reached by that concern. **The Middlesboro Collieries,** too, had an output of 9,500 tons, which compares more than favorably with past showings. Total production of the Province for this year to date approximates 1,600 tons, which is an exceptionally fine record when it is remembered that the collieries of the Crow's Nest were closed down through strike from the latter part of March to August 28 last.

NOVA SCOTIA

The Gore Coal Co. has announced the discovery of a new seam of coal at a depth of more than 400 ft. This is the second seam located through drilling operations at Gore, and it is expected that shafts will be sunk shortly.

ONTARIO

The British American Coal & Ice Co., Ltd., of Ford City, has been incorporated with $40,000 capital stock. The provisional directors are Morris Shapiro, Arthur Stewart and Israel B. Levin.

York Coal Co., Ltd., of Toronto, has been incorporated with $100,000 capital stock. The provisional directors are James Franceschini, Harry H. Salmon and David F. Brazel.

WASHINGTON D. C.

The United States Civil Service Commission states that there is urgent need for eligibles to fill positions of junior engineer and deck officer under the United States Coast and Geodetic Survey, and that an examination for such positions will be held on Dec. 13-14, 1922. A prerequisite for consideration is that applicants shall have completed at least three and one-half years of a course in civil engineering leading to the degree of B.S. or C.E., in a college, university, or technical school of recognized standing. Graduation with one of these degrees is required before appointment.

Traffic News

Heavy shipments of coal from the Kansas and Oklahoma fields, as well as ore shipments from the Tri-State Field, are said to be primarily responsible for the embargo that the Frisco has placed on all freight, except perishables, from connecting lines. That the Frisco railroad will be in a position later to handle increased shipments is made evident by the announcement that the company has given orders for 3,500 additional cars. The coal movement, however, will be well under way for the winter before these cars can be delivered.

Daily and weekly reports on freight car supply and distribution of all common carrier railroads in Washington have been requested by the Department of Public Works. The reports are to cover the divisions west of the Montana gateways and are desired in view of the serious shortage on Western lines. The roads included are the Milwaukee, Great Northern, Northern Pacific, Oregon-Washington, Spokane, Portland & Seattle, Inland Empire, Spokane & Eastern, Camas Prairie and Spokane International.

In order to facilitate the handling of coal on the **Pennsylvania Railroad** orders have been issued for the shops at Altoona to substitute 70-ton trucks for 50-ton trucks under 10,000 of this class of cars in service. Substitution of the heavier trucks will increase the carrying capacity of the coal cars by 40 per cent, or an equivalent of 4,000 additional cars. **The Philadelphia & Reading R.R.,** with the same purpose in view, announced that it had loaned 23 of its locomotives to other roads. **The Central Railroad of New Jersey received 6, the Baltimore & Ohio 15** and the **Lake Erie & Western 2.**

Recent Patents

Mining Sheave. Andrew Bandura, Chicago, Ill., 1,426,271. Aug. 15, 1922. Filed Oct. 18, 1921; serial No. 508,477.

Loading Machine. Robert K. Giffen, Wheeling, W. Va., 1,426,855. Aug. 22, 1922. Filed April 30, 1920; serial No. 377,777.

Mining Tool. Albert L. McDonald, Woodlawn, Pa., 1,427,609. Aug. 29, 1922. Filed Nov. 11, 1920; serial No. 423,245.

Coal Jig. John L. Steinbach, Scranton, Pa., assignor to Wilmot Engineering Co., Hazleton, Pa., 1,427,651. Aug. 29, 1922. Filed May 5, 1920; serial No. 379,007.

Fueling Barge. Arthur F. Case, Cleveland, Ohio, assignor to the Wellman-Seaver-Morgan Co., Cleveland, 1,427,091. Aug. 29, 1922. Filed May 26, 1919; serial No. 299,832.

Mining and Loading Machine. Edmund C. Morgan, New York, 1,427,119. Aug. 29, 1922. Filed July 15, 1915; serial No. 39,986. Renewed Oct. 30, 1920; serial No. 420,821.

Trade Literature

Type M-4 Demand Meter. General Electric Co., Schenectady, N. Y. Bulletin No. 46,108. Pp. 7; 8 x 10 in.; illustrated. This meter is designed for use in combination with a watthour meter to indicate maximum demand.—Advertiser.

Trench, Runnel and Pipe Work by Compressed Air. Ingersoll-Rand Co., New York City. Pp. 32; 6 x 9 in.; illustrated covers recent applications of air tools operated from portable air compressors.

Multiwhirl and G-R Vaneflo Coolers—Exchangers—Condensers for Oil Refineries. The Griscom-Russell Co., New York City. Bulletin No. 210. Pp. 7; 6 x 9 in.; illustrated.

Marion Model 37, 1½ Yard Revolving Steam Shovel. The Marion Steam Shovel Co., Marion, Ohio. Bulletin 304. Pp. 7; 8 x 11 in.; illustrated. This shovel is readily convertible into a dragline, clamshell or orangepeel excavator or material-handling crane.

Heatoven—Unit Heating and Ventilating System. Buckeye Blower Co., Columbus, Ohio. Bulletin No. 121. A four-page folder describing and illustrating the installation of the heatoven.—Advertiser.

N. & W. Type Cinder Plant. Roberts & Schaefer Co., Chicago, Ill. Bulletin No. 47. Four-page folder showing views of conveyors as installed on railroads, with a full page illustration showing in detail the cinder plant electrically operated.—Advertiser.

Swing Hammer Pulverizers. The Jeffrey Mfg. Co., Columbus, Ohio. Catalog No. 368. P. 42; 7 x 10 in.; illustrated. Describes and shows the design, operation and application of these pulverizers for reducing coal, coke, charcoal, bones, etc.—Advertiser.

"CEAG" Electric Safety Lamps. Concordia Electric Co., Pittsburgh. Bulletin No. 105. Pp. 28; 6 x 10 in.; illustrated. Describes the "CEAG" electric safety hand lamp, its charging equipment and accessories; trip lamp; inspector's lamp; mule lamp; locomotive headlight; watchman's lamp; etc.—Advertiser.

Clay Products Cyclopedia. Industrial Publications, Inc., 407 South Dearborn St., Chicago, Ill. Pp. 252; 9 x 12 in.; illustrated. This book consists of two main parts, the first contains definitions and statistics and the second, catalog pages of manufacturers' equipment. The combination gives to the clay products manufacturer all possible information he requires.

Thomas Mine Hoists. Thomas Elevator Co., Chicago, Ill. Pp. 14; 8 x 11 in.; illustrated. Describes ten different types of hoists, including single and double reduction end-lift electric shaft hoists, drum slope hoists, electric room hoists, electric scraper loader hoists and two-speed electric slope hoists. Three pages are devoted to car pullers, both horizontal capstan and vertical capstan.—Advertiser.

Obituary

Frank J. Shaffer, aged 62, secretary and treasurer of the Hocking Valley Products Co., died at Grant Hospital, Columbus, recently from the effects of an automobile accident suffered last April. He had been associated with the mining company for about ten years.

Coming Meetings

Kentucky Mining Institute will hold its annual meeting Nov. 3 and 4 at Seeback Hotel, Louisville, Ky. Secretary, Elizabeth C. Rogers, Lexington, Ky.

The National Industrial Traffic League will hold its annual meeting Nov. 15 and 16 at the Hotel Commodore, New York City. Secretary, J. H. Beek, Chicago, Ill.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Gas Association will hold its annual meeting Oct. 23-28 at Atlantic City, N. J. Secretary-Manager Oscar H. Fogg, 130 East 15th Street, New York City.

Canadian Institute of Mining and Metallurgy, annual Western meeting Nov. 15-17, at Vancouver, B. C. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Can.